

**THE  
RAILWAY GAZETTE**

A Journal of Management, Engineering and Operation  
INCORPORATING

**Railway Engineer • TRANSPORT • The Railway News**

**The Railway Times Herapath's Railway Journal**

**RAILWAYS** • **ESTABLISHED 1835** • **RAILWAY RECORD.**

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## OVERSEAS RAILWAYS

### Special Number of "The Railway Gazette"

This week there has been issued the Annual Special Number of THE RAILWAY GAZETTE devoted entirely to recent progress made by, and current problems affecting, thirty-three important railways in the Colonies, Dominions, India, and other countries such as Argentina and Brazil where British-owned railways operate or are partly British-officered. This number is additional to the ordinary weekly issue, and has been sent to all annual subscribers. Extra copies, price 2s., may be obtained through any newsagent, or direct from the Publisher, post free, 2s. 6d. For further particulars see advertisement page 22.

## TO CALLERS AND TELEPHONERS

Consequent on the war and the blackout regulations, as an emergency measure to assist our staff in getting home before it is fully dark, our office hours (without a lunch interval) until Saturday, February 10, 1940, are:—  
Mondays to Fridays - 9 a.m. till 3.15 p.m.  
Saturdays - - - 9 a.m. till 1 p.m.

With the object of conserving paper by avoiding the return of unsold copies, readers are advised in the interests of all concerned to place a regular order for THE RAILWAY GAZETTE either with their newsagent or direct with the Publisher.

## Aims Versus Achievements in Engineering

IN an address before the Yorkshire Association of Civil Engineers that we summarise elsewhere in this issue, Mr. J. Taylor Thompson dwells on the professional and personal qualifications necessary for engineering leadership. All that he said was very much to the point and our only regret was that the speaker did not go on to discuss the present lamentable misdirection of engineering skill and energies. The true aims of the engineer have been concisely and beautifully formulated for the members of the Institution of Civil Engineers in words we have quoted many times before. These words conjure up a vision of scientific progress, sweeping want and suffering and ugliness from the face of the earth. The reality is tragically at variance with this vision: engineering has for its primary objective at this very moment the paralysis of the commerce of nations and the deliberate causation of death and destruction over the greater part of Europe. In their higher aims engineers must be said to have failed. Men have not yet been made to see the possibilities for prosperity and peace that lie to hand—they cry for more living room—for wider foreign markets—and even for inspirations from God. They still feel the pinch, particularly in Germany. Engineers have failed, but are they to be blamed for this failure? They have gained control of fire, air, and water, and could produce an abundance of good things for everybody, but they have not yet laid their hands on that most powerful element of all, the credit of strong sound-hearted peoples.

\* \* \* \*

## Overseas Railway Traffics

Except in the territories served by the Buenos Ayres & Pacific, the Argentine North Eastern, and the Entre Rios Railways, traffics of the Argentine railways have continued to expand in the 20th and 21st weeks of the current financial year. The largest increase in the fortnight has been that of 284,000 pesos shown by the Buenos Ayres Great Southern, closely followed by the 263,350 pesos gain of the Central Argentine. On the Buenos Ayres Western the net advance was 122,000 pesos. An improvement in exchange slightly helped Central Uruguay sterling receipts in the 21st week.

	No. of Weekly Week Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
Buenos Ayres & Pacific*	21st 1,203	— 74	24,188	+ 413
Buenos Ayres Great Southern*	21st 2,182	+ 239	39,132	+ 1,423
Buenos Ayres Western*	21st 852	+ 127	14,109	+ 999
Central Argentine*	21st 1,775	+ 115	38,117	+ 4,259
Canadian Pacific	46th 733,600	+ 176,600	26,558,800	+ 1,304,000
Bombay, Baroda & Central India	32nd 236,925	— 8,175	5,404,050	— 48,525

\* Traffic figures in thousands of pesos.

Mileage operated by the Great Western of Brazil has now been reduced to 1,016 by the deduction of the Natal—Nova Cruz section of 76 miles.

\* \* \* \*

## The Euston—Thurso Naval Special

During the great war of twenty-five years ago the steadily-increasing traffic to and from Thurso (for Scapa Flow) caused growing embarrassment to both naval and civilian travellers, and eventually resulted in the establishment of a remarkable regular naval train, called the Euston—Thurso Naval Special, over the 717-mile route its title indicated. It began to run on February 15, 1917, and at first was routed between Carlisle and Perth over the Caledonian Railway, without a stop. Men for Rosyth thus had to work back from Perth, and, to avoid this, the route was altered on May 21, 1917, to the Waverley line of the North British Railway, via Hawick, Galashiels, Edinburgh, and the Forth Bridge. The portion of the train with men for ships in the Firth of Forth was then detached at Inverkeithing, to proceed over the Admiralty

line to Rosyth. The throughout schedule allowed 21 hr. 30 min. northwards, and 22 hr. 20 min. southwards. The summer departure from Euston was 6 p.m., but in the winter months (October 1 to March 2) the departure was advanced to 3 p.m. so that the embarkation at Thurso could be completed during daylight hours. Loadings on this train, which was normally of 14 corridor vehicles, naturally varied considerably, but the average was about 300 passengers. In all some 475,000 were carried up to the time the train was discontinued on April 30, 1919.

\* \* \* \*

### History of the East Indian Railway

Thirty-three years ago the Calcutta firm of Thacker, Spink & Company produced a volume entitled "History of the East Indian Railway" by G. Huddleston, Chief Superintendent, E.I.R. It was a fascinating story, written unofficially, and designed primarily for the staff of that great railway. In the preface the author stated that he was prompted by a feeling that, unless something was done to place on record facts which are so easily forgotten and so soon buried in oblivion, the opportunity would be lost. This prompting led him to compile a volume which was a nice blend of historical record and intimate incident, and the one regret of the present-day reader is that it finished arbitrarily at the diamond jubilee year of the old company. Now, in retirement in England, the same author has completed his task by producing "History of the East Indian Railway, Part II," which has recently been issued at Bristol by the St. Stephen's Bristol Press Limited. In this Colonel Huddleston adopts a far more chatty and critical style than in the original volume, and, in addition to completing the history up to the end of the company in 1924, he discusses many points of traffic operational interest to Indian railways in general.

\* \* \* \*

### The Position in Spain

The decision of the Spanish Government to proceed with the construction of the Madrid-Burgos railway, referred to in our Overseas columns this week, follows the recent successful floating of an internal loan for 2,000 million pesetas (£50,000,000) and is a sign of the work of reconstruction that is steadily going on in Spain since the termination of the civil war. Difficulty is, however, being experienced in meeting the huge demands for railway materials, and although all requirements can probably be met from national sources, it will take a long time. For imported material the problem is one of foreign exchange. Germany was one of Spain's best customers, taking a large proportion of her pyrites, iron ore, and foodstuffs, and sending in return machinery and rolling stock, but *Hisma*, the Spanish-German trade organisation, has been dissolved. So far, political considerations have prevented a transfer of the trade to the Allies, as an informal embargo on exports to belligerents is being maintained. Before the civil war, Great Britain was Spain's best customer, and now that Germany is cut off by the blockade, it is to be hoped that free exchange of goods may again be established. The settlement of the clearing debt due to Great Britain at the outbreak of the civil war is a consideration, but this should not prove an obstacle to a direct interchange which would be so greatly to the advantage of both countries.

\* \* \* \*

### The Farringdon (L.P.T.B.) Collision

Colonel Trench's report on the collision of May 1 last at Farringdon station on the Metropolitan Line of the L.P.T.B., is summarised on page 720. A down Hammer-

smith 3-car metadyne train, with the new air-controlled doors, started away and struck a G.W.R. engine which was crossing the down line in the opposite direction, a move which is made some 15 times daily. Conflicting evidence was given as to the condition of the down starting signal, and, in view of modernisation of the signalling apparatus worked from the Farringdon box, Colonel Trench investigated with special attention the possibility of there having been any defect or liability to intermittent fault in the equipment, but concluded that there was no ground whatever for thinking so. He therefore held the motorman responsible for passing the starting signal at danger, and the guard for not making sure, according to regulation, that it was "off" before giving the signal to start. His bell signal to the motorman proved only that all doors were closed, whereas the platform type of bell signal, worked by the guard's flag handle, long used on the Metropolitan Line in conjunction with an illuminated "S" light on the starting signal, proves that the signal is really "off." This apparatus is still in use for the older type of train, and the motorman, whose attention was momentarily directed to his windscreen wiper, may have half consciously taken the bell, though of quite dissimilar sound, to have been rung on the platform, and so started without further thought. He could also see a green signal further on and this may have contributed to his failure. He had a very good record as a motorman. Colonel Trench makes certain recommendations designed to prevent a train coming so near to the fouling point as this one did, and to improve conditions during the time that the platform bell signal apparatus remains in service.

\* \* \* \*

### Abolition of First Class in France

In reducing, from December 1, the number of classes on their system to two, the French National Railways fall into line with most of the principal railway administrations of the Continent, where only second and third are now to be found, except on the most important long-distance and international expresses in which a certain proportion of first class accommodation is provided. This reduction of the number of classes makes for simplicity and for the greater satisfaction of the majority of travellers. It has been accompanied so far by the raising of the standard of comfort in the second (or upper) class accommodation rather than a drop from the standard of the first class to that of the second. Norway and Sweden are among the more notable examples of railways in which second class accommodation in all trains is fully up to the standard of the best first class to be found elsewhere. Indeed, the means of providing first class accommodation on the most important trains there is by reservation of a limited number of second class compartments for first class passengers, and in sleeping cars to reserve for the exclusive use of the first class travellers a whole compartment. For these privileges the first class passengers must, of course, pay accordingly.

\* \* \* \*

### Dutch Railway Architecture

In the last few years new buildings have shown the direction in which Dutch railway architecture is moving, at least for the present, under the direction of S. van Ravesteyn. Van Ravesteyn was trained in the Delft technical high school, and in 1912 he joined the then Dutch State Railways on the engineering side. His creative urge soon turned towards architecture, but it was not until 1921 that he began to carry out such work for the State Railways. In 1937 he built a goods office at Feijenoord, a suburb of Rotterdam. His latest work is the rebuilding of Utrecht Central station, of which a model was illus-

trated in our issue of May 19 last. A critic has written that this station design suggests "a sweeping gesture of welcome to its visitors, though the gesture is not too sweeping." The curving motifs in the design are a change from the straight lines that distinguish most architectural work of this kind, and evidently they appeal to van Ravesteyn, as he has used them in the interior of the booking hall of Utrecht station, and in the decoration of Princess Juliana's yacht. They may be due to a former period in van Ravesteyn's artistic evolution, when he used a modified baroque, as in the board room of the Utrecht Fire Insurance Company. In what final style his artistic progress will crystallise, time, and perhaps the Netherlands Railways, will show. Meantime on page 709 we depict some current examples.

\* \* \* \*

#### Lateral Forces Between Locomotives and Track

Interesting tests were recently undertaken by the former P.L.M. Railway of France to ascertain whether Atlantic locomotives hauling trains at speeds of 85 m.p.h. would set up greater lateral forces between locomotive and track than those arising when Pacific locomotives are run at 75 m.p.h. The results, as shown in some detail on page 702, were satisfactory, as it was established that the forces set up by the smaller locomotive were considerably lower in spite of the higher speed. It was also found that unnecessarily large forces are set up at high speed by non-co-planar balancing, in addition to avoidable stresses in the crank axle itself, and that by using the more scientific "auto-balance" crankshaft the maximum lateral stress on the straight track was more than halved. These forces are of short duration but undoubtedly set up considerable wear and tear in track components as well as in the locomotive itself. The results of these trials are further evidence of the importance of making every possible use of scientific research to ensure maximum safety and efficiency in working. As M. Chan has shown by these investigations, stresses do arise from quite unexpected sources, which are unlikely to be detected by mathematical analysis alone.

\* \* \* \*

#### Five New Types for India

Of the five new types of locomotive at present building in this country for service in India four are of the tank variety and one a Pacific. The tank locomotives incorporate the 2-6-2, 2-6-4, 0-6-2, and 2-4-2 wheel arrangements, the last named being somewhat unusual in modern practice. Incidentally it is the only one of the series to have poppet valve mechanism, the others all being fitted with Walschaerts gear. The designs have been adopted by the Indian Railway Board as prototypes for standard engines to perform duties intermediary between those of existing classes in India, and a noteworthy feature of the construction is the duplication of details throughout the various types. Particular care has been taken in designing and building the engines to conform to Indian Government rules, especially where the distributed and total weights are concerned. The maximum permissible axle loading is 16.5 tons, and, in order to keep within this, certain parts have been fabricated by welding instead of casting or forging. Information relating to this aspect of the matter is contained in the article on pages 704 to 708 of this issue in which illustrated particulars of the "WV" 2-6-2 type tank engines are given, together with outlined dimensioned drawings of the four other classes, none of which latter has, as yet, been completed. The locomotives, which number 26 in all, are designated the "W" series; some for the East Indian and others for the North Western and the Great Indian Peninsula Railways.

### The Colombian National Railways

THE annual report of the Administrative Council of the Colombian National Railways for the year 1938, covers the operating results of the railways controlled by the council, accounting for 2,065 km. of the total of 3,365 km. of the railways of the Republic. The system administered by the council is made up of six different lines, each with its local management, and the accounts for each are published separately. The council also administers the Gamarra—Ocaña aerial cableway (47 km.) and the Buenaventura pier. The results, including the cableway and pier, for 1938 compare with those of the previous year as follows:—

	1937	1938
Passengers, number .. ..	5,858,100	5,920,073
Goods, tons .. ..	1,463,307	1,485,326
Train kilometres .. ..	3,547,386	3,551,443
Operating ratio, per cent. .. ..	73.03	77.63
	\$	\$
Passenger receipts .. ..	2,831,277	2,904,860
Goods receipts .. ..	6,939,031	7,385,889
Gross earnings .. ..	13,285,766	13,882,046
Working expenses .. ..	9,703,305	10,776,209
Net earnings .. ..	3,582,461	3,105,837

Out of net earnings, \$819,953 is appropriated to betterments and \$600,000 to depreciation reserve. After providing for insurance and other net revenue items, and \$260,000 for capital account, \$1,321,030 was available for the repayment to the National Government of the loan for the Buenaventura reconstruction and for other sundry advances and supplies. The use of railcars was extended in 1938 to the Northern line, 46,173 car-kilometres being recorded. On the Girardot—Tolima—Huila line railcar mileage increased from 263,872 km. in 1937, to 266,950 km. in 1938.

\* \* \* \*

### The A.A.R.

ALTHOUGH the past twenty years have seen the main railways in practically every large country grouped into large units—four in Great Britain, two in Canada, and one in France, for example—those in the United States of America have remained virtually unaffected by this tendency. Various voluntary grouping schemes have been propounded, but have proved unattractive to the principal companies, and compulsory amalgamation seems to be outside the range of practical politics. There have been many moves, however, among U.S.A. railroads for closer co-operation, particularly in the spheres of research, publicity, and ancillary traffic activities such as road transport and "express." An outstanding example is provided by the A.A.R., or Association of American Railroads, which is an organisation of the principal railways of the United States, Canada, and Mexico, for dealing with matters of common concern in such widely different branches of railway activity as operation, maintenance, engineering, research, traffic, accounting and finance, valuation, taxation, legislation, and public relations.

The association is comparatively new, for it was formed as recently as 1934 as a merger of the American Railway Association, the Association of Railway Executives, the Railway Accounting Officers' Association, the Railway Treasury Officers' Association, the Bureau of Railway Economics, and other organisations. The present body is nevertheless the lineal descendant of such earlier organisations as the Time Convention of 1872; the General Time Convention, which in 1883 established standard zone time in the U.S.A.; the Master Car Builders' Association, formed in 1867, which secured the standardisation of freight cars necessary for free movement throughout the country; and the Railway Accounting Officers' Association,



formed in 1888. At the present time the railways of the U.S.A., Canada, and Mexico, which are members of the A.A.R., represent 96 per cent. of the mileage and 99 per cent. of the business done. Numerous other railways, both in North America and in other parts of the world, are associate members and receive the reports of the association's technical and research committees. The members elect annually a board of 17 directors composed of railway chief executive officers, and this has headquarters at Washington, D.C.

As we have indicated, almost every phase of railroad-ing is touched by the work of the A.A.R., and an outline of the functions of the seven divisions which comprise the Operations & Maintenance Department is given in an article on page 701. Apart from day-to-day matters, the association handles such special problems as marshalling fleets of vehicles to meet the peak demands concerned with the movement of a great crop or coping with a great disaster. Moreover, the association joins with universities, trade and industrial groups, and other organisations affected in sponsoring joint experiments and tests. Altogether, 267 committees in the various departments of the A.A.R. are at work on the great variety of problems provided by the continuous search for better and more efficient transport.

\* \* \* \*

### Locomotive Power in 1914 and 1939

**C**OMPARISON of the locomotive power available on British railways at the beginning of the present war with that available during the 1914-1919 conflict is a matter of considerable interest. Apart from improvements in design, such as that of the valves and valve-gear to allow of early cut-off working, and better steam flow from boiler to exhaust, which have greatly increased power output in relation to coal consumption, the principal advances have been in the tractive effort developed per unit of motive power. For example, up to 1914, and, indeed, to 1922, apart from *The Great Bear* of the G.W.R., no Pacific locomotives had appeared on British metals. On the Great Northern Railway the 69-ton Ivatt Atlantics, with a tractive effort of 17,340 lb., still held the field in main-line passenger service, and though they could manage the war-time passenger loads over the open stretches of the main line from London to York, with the heaviest trains they required to be piloted from King's Cross out to the summit at Potters Bar; the North Eastern and North British Railways similarly relied on Atlantic engines for main-line passenger operation. Today the L.N.E.R. has in service 114 Pacifics, with 29,835 to 35,455 lb. tractive effort, capable of working 700-ton loads if necessary on wartime schedules, not to mention many general-purpose engines nearly as effective both in speed and load haulage. In 1914 the L.N.W.R. had just introduced the "Claughton" 4-6-0s, and the Midland was still handling all its passenger services with 4-4-0 locomotives; today, the L.M.S.R. possesses over thirty powerful Pacifics, together with 71 "Royal Scot" 4-6-0s, and 243 "5X" 3-cylinder 4-6-0 engines, all built since 1926. The Great Western Railway has similarly added to its stock since the end of the last war the 30 4-6-0 "Kings," and 129 4-6-0s of the "Castle" class, though G.W.R. designs were so advanced by 1914 that in this case the increment of power and efficiency has not been so great.

Most valuable of all classes in such an emergency as the present, however, are the general-purpose types which have been built in such large numbers during recent years, and which have the double advantage of being able to travel over the major proportion of the lines of their owners, as well as that of a standardisation and interchangeability of parts both unknown with the great variety

of types with which British railways entered the 1914-1919 war. Of all these designs, perhaps the most outstanding is the Class "5" 6 ft. 4-6-0 of the L.M.S.R., of which 472 are now in service; the L.N.E.R. has 70 2-6-2 "Green Arrows," apparently capable of much the same in the realm of speed as the Pacifics and more in the matter of load haulage, together with 193 powerful 3-cylinder Moguls of the "K3" type; on the G.W.R. there are now in service 186 "Hall" class 6 ft. 4-6-0s and 100 5 ft. 8 in. "Manor" and "Grange" 4-6-0 locomotives, while the Southern now possesses 71 4-6-0 and 174 2-6-0 locomotives of this category. As to purely goods types, the increases have been more in efficiency than in power per unit, for the reason that freight operation in this country has tended more in the direction of moderate loads at higher speeds than in that of extremely heavy low speed workings. The mixed traffic types just referred to therefore handle a large proportion of the freight traffic of the country.

Summing up, a comparison of the total locomotive stocks of the independent railway companies at the end of 1913 with the group stocks at the end of 1938 shows that, apart from efficiency or tractive effort, the more powerful main-line types—six-coupled, eight-coupled, and Garratt—had up to the latter date been roughly trebled in numbers, as may be seen in the annexed table:—

Type	L.M.S.R.		L.N.E.R.		G.W.R.		S.R.		Total	
	1913	1938	1913	1938	1913	1938	1913	1938	1913	1938
4-6-4	—	—	—	1	—	—	—	—	—	1
4-6-2	—	28	—	114	—	1	—	—	1	142
4-6-0	426	902	127	338	123	511	26	178	702	1,929
2-6-2	—	—	—	44	—	—	—	—	—	44
2-6-0	11	289	22	274	123	290	2	174	158	1,027
2-8-2	—	—	—	8	—	—	—	—	—	8
2-8-0	36	109	114	483	56	161	—	—	206	753
0-8-0	384	727	244	287	—	—	—	—	628	1,014
0-10-0	—	1	—	—	—	—	—	—	—	1
Garratt	—	33	—	1	—	—	—	—	—	34
Total	857	2,089	507	1,550	303	962	28	352	1,695	4,953

As to tractive effort, to give but one example, 191 modern main-line passenger engines of the L.N.E.R.—114 Pacifics, one 4-6-4, and six 2-8-2 and 70 2-6-2 engines exert a total tractive effort of 6,361,100 lb., whereas the 178 Atlantics which were handling G.N., N.E., and N.B. passenger traffic at the beginning of the war in 1914 exerted a joint effort of 3,235,100 lb. That is to say, an average tractive effort of 18,000 lb. per unit has grown to over 33,000 lb. per unit, or has been nearly doubled. Both in numbers of locomotives, and in power output per locomotive, therefore, British railways have made an enormous advance in this progressive quarter of a century.

**A.R.P. LAMP ADAPTORS.**—Under present conditions the need to replace high-power electric lamps by relatively small ones frequently arises, but unfortunately the screw or bayonet-catch holders for lamps of 300 to 1,500 watts capacity differ in size from those of 15 to 150 watts. The difficulty has now been overcome by the introduction of a range of special adaptors. These are made by the General Electric Co. Ltd. and enable small screw or B.C. lamps to be used in either large B.C. holders or large screw holders. The four adaptors needed to cover the range of requirements are described in G.E.C. publication JD/8404, and applications for this are invited.



## LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

### Emergency Services

3, Kensington Palace Gardens, W.8

November 28

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your footnote to the letter of Mr. F. H. Masters, in your issue of November 17, appears to be somewhat uncalled for. The comment would perhaps be justified, if your correspondent complained about the "drawn out" schedules. His complaint, however, is about the persistence of late running—quite another matter. Unfortunately, there seems to be a general air of indifference as to timekeeping.

No longer do we see the platform inspector looking at his watch, or the stationmaster coming out of his office to ascertain why the train is at the platform long after its departure time. It may be that the latter no longer receives curt enquiries from "Division" as to causes of delay, and Divisional Officers, finding that they are no longer worried by the "higher ups," are becoming indifferent to the failings of the "lower downs." Is this an indication of what to expect if the railways are nationalised? Is it not a fact that easy timings lead to indifferent working? Thousands of car users have been forced on to the railways. Are they being favourably impressed, or are they longing to get back on the road?

Yours truly,

P. M. BROOKE-HITCHING

### The Centenary of "Bradshaw"

60a, Green Lane, Northwood, Middlesex

November 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In a footnote to Mr. Sailes's letter in THE RAILWAY GAZETTE of November 24 you ask how many variations of the 1840 *Companion* are extant. The 1840 *Companions* fall into two classes, those fully dated with day and month of publication, and those dated only with the year. The

January 25. London, Charles Tilt, Fleet Street.

February 25. London, Charles Tilt. Another copy Shepherd and Sutton, Priest Court, Foster Lane, Cheapside.

March 2. London, Shepherd and Sutton (as above). Another copy Renshaw and Kirkham, 12, Budge Row.

March 20. London, Shepherd and Sutton.

April 1. London, John M. Knott, 5, Bride Court, another copy Liverpool, Henry Lacy, Bold Street, another copy Derby, Henry Mozley and Sons.

July 1 (added by overprinting). Manchester: Printed & Published by Bradshaw & Blacklock, 27, Brown Street; and sold by Shepherd and Sutton, Priest Court, Foster Lane, Cheapside, London.

Of the *Companions* dated with the year only I have nine, all are slightly different either in the timetables or other details. All of these have the imprint Manchester, followed by "Printed & Published by Bradshaw & Blacklock, 27, Brown Street . . ." Four were sold by Charles Tilt, Fleet Street, London; two by C. Davies and Co., North John Street, Liverpool; one by Darton & Clarke, Holborn, London; one by Henry Mozley and Sons, Derby; and one by Joseph Graham, 2, Jewry Street, Aldgate, London. I know of another copy, dated with the year only, sold by H. Lacy, Bold Street, Liverpool, and there is Mr. Charlewood's copy, reproduced in your recent issue, sold by John M. Knott, 5, Bride Court, London, whose name appeared also on a fully dated issue. There are therefore 23 known variations of the *Companion* of 1840, and probably more.

On all the issues it was stated that the book was sold by all the railway companies, and a letter dated December 17, 1839, from R. Renshaw of Bradshaw and Blacklock to the London & Birmingham Railway offered the company 25 per cent. off the selling price if they would take several dozen of the forthcoming issue to sell at their stations "a custom now become very general." The letter was exhibited in 1937 at the Science Museum, South Kensington, London.

I have used the ordinary notation for clearness instead of "1st Mo. 1st, 1840" &c. as in the originals. Renshaw's letter was dated "12th Mo. 17, 1839."

Yours faithfully,

REGINALD B. FELLOWS

**BRADSHAW'S**

**Railway Companion,**

CONTAINING

THE TIMES OF DEPARTURE,

FARES, &c.

OF THE RAILWAYS IN ENGLAND,

AND ALSO

**Backney Coach Fares**

FROM THE PRINCIPAL RAILWAY STATIONS

ILLUSTRATED WITH

MAPS OF THE COUNTRY THROUGH WHICH THE

RAILWAYS PASS,

AND PLANS OF

LONDON, BIRMINGHAM, LEEDS,

LIVERPOOL, AND MANCHESTER.

PRICE ONE SHILLING.

LONDON:

CHARLES TILT, FLEET-STREET

AND SOLD BY ALL BOOKSELLERS AND RAILWAY

COMPANIES

2nd Mo. 25th 1840.

following is, I believe, a complete list of the fully dated issues. I have only two:—

January 1. London, Charles Tilt, Fleet Street. Another copy Shepherd and Sutton, Foster Lane, Cheapside.

### Rubber Buffer Springs for Private Owners' Wagons

Within the last year or two private railway wagon owners have given serious consideration to the use of rubber buffer springs as an alternative to steel springs. Numbers of well-known owners have placed initial trial orders and in some cases, repeat orders with the firm of George Spencer Moulton & Co. Ltd., the originator and inventor of the springs. As is commonly known, rubber springs have for some years been used as a standard on many leading railways throughout the world, and this factor has no doubt considerably influenced the private owners. The manufacturers have in their possession rubber springs which have been removed from wagons after as many as 20 years' service, and as an inspection of their condition shows, they have then been removed only for exhibition purposes, and would have given many years' further service. Incidentally, these springs are open to the inspection of anybody interested. The investigations of the private owners in this direction will doubtless be restricted now that the Government has, through the Railway Executive Committee, taken over all the privately owned wagons, with the exception of tank wagons, but possibly the question of rubber springs will receive careful attention, especially as it has the merit of easing the position with regard to steel.

## THE SCRAP HEAP

### THIRTEEN

Albert George Wyatt, 53, of Roeburn Avenue, Surbiton, was killed by a train at Nine Elms, Battersea, on November 13. The train consisted of 13 wagons. In his pockets he had 13s. A verdict of accidental death was recorded at a Southwark inquest.

Recently a bullock travelling by the L.N.E.R. escaped from a cattle truck at Angel Road station, ran three miles down the line, and was captured about two hours later. Our national dailies heard the story and without reference to the L.N.E.R. press section gave the following somewhat divergent versions:

*The Daily Herald*—"... after 20 hours of exciting liberty."

*The Daily Express*—"... escaped in the blackout on Tuesday night... last night (Thursday) surrendered."

*The Daily Mirror*—"... railway-men... joined in an 8-hour hunt."

A black-headed gull found itself at the Zoo the other day after it had been hit by an L.M.S.R. locomotive. The driver picked it up at the Camden sheds and took it to the Zoo. There it was found to have suffered little injury and was placed in the great aviary with other gulls.

Many stories are told of Father Bernard Vaughan's directness of speech. On one occasion he was travelling by train with a man who insisted on having the window of the carriage open contrary to the wishes of all the other

passengers. The man got out at Abergavenny and Father Vaughan leant out of the window and called out: "You have left something behind." The man hastily came back. "What is it?" he asked. "A bad impression," replied the priest.

### CIRCUMSTANCES GOVERN ACTIONS

"Dr. Charles Goring made a complete study of convicts in English prisons and professors and students at Oxford University, only to find that so far as head shapes and dimensions were concerned, no variation was revealed. There were just as many receding foreheads among the professors as among the criminals."—Mr. J. Taylor Thompson, in his presidential address to the Yorkshire Association of the Institution of Civil Engineers for 1938/39.

### KEEPING THE SECRET

The British railways have made a special appeal to the public to despatch Christmas parcels early to ensure delivery before Christmas Day. Owing to lighting restrictions, the work of transport and delivery will be greatly assisted if parcels are handed into the railway stations and depots during daylight hours. Every parcel or package should be packed securely and fully addressed by ink on a white label. A duplicate of the label should be enclosed in every parcel or package. To retain the element of surprise, it is suggested that Christmas parcels despatched early should be marked "Not to be opened until Christmas Day."

### They Knew!

The inscription underneath a pictorial poster of the Reichsbahn exhibited at a number of English railway stations reads:—

"Visit Medieval Germany"

(Nothing like being candid!)

From "*The Railway Gazette*," November 18, 1938.

The poster, which was reproduced in our issue of December 2, 1938, was the following:—



### A Literary Discovery

During the clearance of an attic in The Hoo a few scattered pages came to light, which seem to have formed part of a hitherto unknown poem by Alexander Pope. These fragments are reproduced below.

#### CONTRAST

Give aid, my Muse! Attune my humble Pen—  
I would hymn CONTRAST in the 'Affairs of Men!  
Come first with me to seek that new VERSAILLES  
Where My Lord NEWTOWN rules as ROI SOLEIL.  
Firm on his Throne, surrounded by his Court  
From the drab Squalor of the City brought  
To dwell in Splendour mid the Rustic Scene,  
Unvexed by Duties in a Life serene!  
The stately HOO upon it's Ridge stands high—  
Below, pellucid MIMRAM gurgles by,  
Afar by unknown Courses to attain  
Union at last with NEPTUNE'S stormy Main.  
See how the Courtiers saunter 'neath the Trees—  
Toil they eschew as 'twere some fell Disease;  
Some to preserve their Figures take to Bowls—  
The biased Wood in mystic Curve then rolls;  
Others with Silk wipe off th' unwonted Sweat  
After the hard-contested Hard-Court Set;  
Yet others seek the lordly Mess, and dine  
On Food Ambrosial washed with Nectar Wine!  
CONTRAST the Case of those who're forced to Stamp  
Knee-deep through Mud in WATFORD'S hutted Camp,  
Or who, entrapped in KENNETS marshy Ground  
Must crane their Necks if they would not be Drown'd.

(End of first fragment)

(Second fragment)

But now, my Muse, to less exalted Themes  
Adjust thy Figures, Tropes, and Enthymemes!  
From HOO'S OLYMPUS what appalling Slump  
To the grim Horrors of the Stygian SUMP!  
Sure, Cynicism takes of Scorn its Fill  
To say the SUMP is placed in PICK'S IDYLL!  
Through the Earth's Crust, by endless twisting Rift,  
Sans Hope, sans Rope, assuredly sans Lift,  
Down, deeply down, far 'neath TRUTH'S fabled Well,  
Here in the Murk the TROGLODYTES must dwell,  
'Mid Gales Plutonic bearing stony Dust—  
Even for such as THEY it seems Unjust!  
Not worse AVERNUS drawn by DANTE'S Pen,  
Not ACHERON can show a Grislier Den!  
To it's doomed Inmates DANTE'S Circle Seven  
By CONTRAST well might seem a very HEAV'N!  
Such is the Hole where BARRINGTON keeps Ward,  
Where thro' the endless Minutes GERALD'S bored;  
Here CHIEFS are sent to Expiate some Sin  
While unseen Monsters hurtle past with Din!  
Even the Good Lord NEWTOWN deep has dived—  
But not because of Sins that must be shrived;  
'Tis as a Missioner to Sinners Doomed  
He visitation makes to Those Entombed!  
Be brave, my Heart, and mask thy Shudd'ring Fear  
For now the stern SURRAYIF draweth near!  
Deep in the SUMP the AUTARCH loves to dwell  
Nor e'er will free his Minions from this HELL!

(End of second fragment)

From "*Ballyhoo Review*," the weekly news bulletin of the L.N.E.R. H.Q.1.

## OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

### NEW ZEALAND

#### Official Opening of East Coast Extension

The Napier-Wairoa-Waikokopu section of the North Island East Coast extension was officially opened by the Minister of Railways, Mr. D. G. Sullivan, on July 1. The intention is to proceed with the further extension from Waikokopu to Gisborne, thus linking that important centre and the isolated section of railway thence to Matawai and Motuhora with Napier and Wellington. It is further intended eventually to link up the Gisborne-Motuhora line with the Tauranga branch, connecting with Frankton, Auckland, and the northern part of the main trunk line. This will close the gap shown on the inset map below and provide an alternative, though somewhat roundabout through route between Wellington and Auckland via Napier.

The passenger service on the newly-

opened section to Waikokopu is [as described in our issue of April 7—Ed., R.G.] the first in the Dominion to be worked entirely by railcars.

### VICTORIA

#### First Australian Railway's 85th Birthday

September 15 was the 85th anniversary of the opening of the Flinders Street to Sandridge (now known as Port Melbourne) railway, and the running of the first train in Australia. That historic occasion had its tragedies and comedies, for the two locomotives ordered from England to inaugurate the service had not arrived, and the pioneer train was hauled by a remarkable improvised locomotive, consisting of a stationary engine mounted on a railway truck. However, it performed its duty successfully, drawing four coaches out of Flinders Street punctually at 12.20 p.m., the scheduled

departure time, and duly arriving at Sandridge.

### CEYLON

#### New Coaching Stock

A new type of third class carriage is at present under construction on the Government Railway; thirteen coaches have already been completed and six more are in hand. Each will accommodate only 78 passengers, instead of 96 as in earlier types, in three compartments connected by a side corridor; sliding doors give access to each compartment from the corridor. The seating is cushioned, and roof ventilation supersedes that above the windows. This new stock will be used mainly in the longer-distance trains, and is all being built at Ratmalana (Colombo) shops.

A new series of second class sleeping cars is also under construction and embodies several new features. The cars are expected to be turned out this month (October).

#### Measures Resulting from the War

Owing to the probable control of petrol, due to the war, the Ministry of Communications and Works has accepted the Acting General Manager's recommendation that the Uda Pussellawa line should not be closed so long as its operation will effect a saving of petrol. The line can probably be run for at least another year without appreciable capital expenditure upon it being necessary.

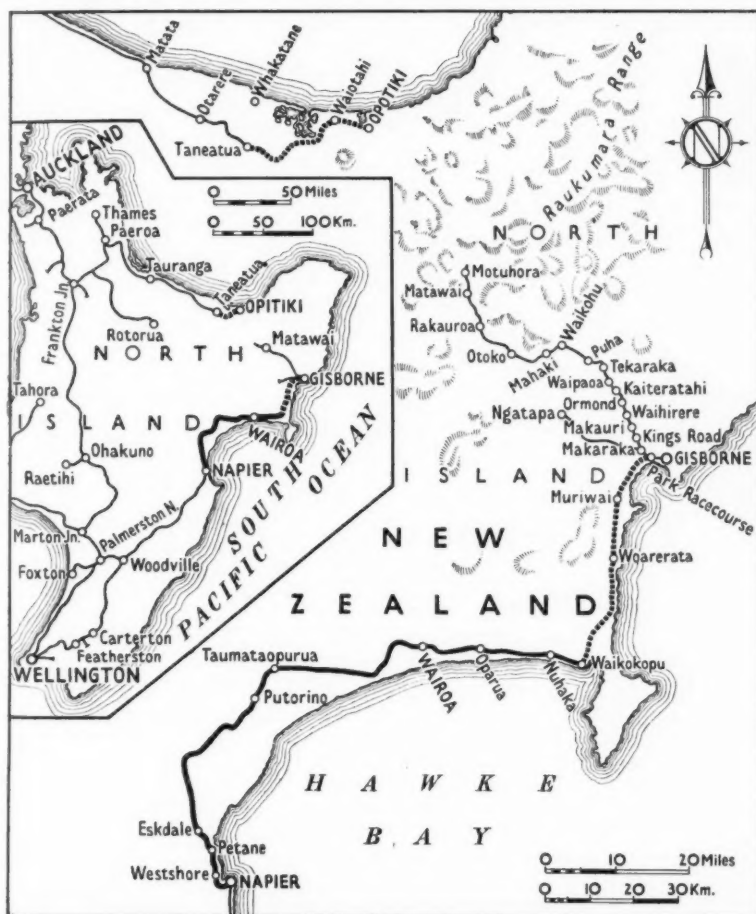
#### Retrenchment Measures

Owing to the war, over 40 trains and railcars at present running are to be cancelled from this month, but certain adjustments are to be made in the train service in order to minimise inconvenience to the travelling public. This is one of the steps taken by the railway authorities at the request of the Ministry of Communications and Works to reduce the working expenditure of the railway. It is estimated that, as a result of this measure, the total train-mileage for the year, which is over 4,000,000, will be reduced by about 250,000 miles.

The least patronised trains and railcars on every section of the railway have been selected for cancellation. The largest number of withdrawals in any single section of the railway is on the coast line, where 13 trains to and from the suburbs are to be cancelled.

#### Further Economies

The railway canvassing staff has been reduced by more than half, as a retrenchment measure consequent on the outbreak of the war. There are now only three officers to canvass traffic for the railway, as it is considered that owing to the prevailing conditions in the island the scope for increasing traffic is now considerably restricted. Apart from this consideration, the need for strict economy in order to reduce the recurrent working expenditure, has also weighed with the authorities in taking this step. The appointment of competent officers



Map showing Napier-Waikokopu extension, and (inset) general course of future Wellington-Auckland roundabout alternative route via Napier



conversant with various branches of railway work, to attract more traffic to the railway by canvassing, was one of the measures recommended by the Transport Commission. The canvassing staff was strengthened about two years ago following that recommendation.

#### Military Ambulance Carriage

A military ambulance carriage, recently constructed at the Ratmalana shops was inspected by several army medical officers at Maradana station, Colombo. It has been converted from a brake van and is divided into a large compartment containing four fittings, each capable of carrying three stretchers a small room for the orderly, and another compartment with two stretcher fittings. This last section is also fitted up as a dispensary. Electric fans are provided.

#### Reorganised Goods Service

The railway authorities have drawn up a reorganisation scheme for the Colombo goods shed which will be put into operation this month. All the traffic and accounting work which are at present performed at the office of the Goods Agent, Colombo goods shed, will be decentralised and placed in charge of the supervisors of the various warehouses. Under this decentralisation scheme, each warehouse will form a separate unit and deal with all traffic and accounts work in the same way as is done at a station.

#### More Firewood to be Used

Proposals are being considered by the Minister of Communications and Works to minimise the use of coal on the railways by a larger use of firewood. Owing to the war, coal is likely to be difficult to obtain and costly. The proposals are expected to effect an annual saving, even with the present price of coal, of about Rs. 250,000, and it is also realised that the price of coal may become much higher. This proposed measure of economy is to be adopted on the northern, eastern and Talaimannar lines. At present little firewood is used with the coal. It is proposed in future to use more firewood than coal on each engine. About 1,400 tons of coal are used every month, and it is estimated that 16,800 cu. yd. of firewood would be equivalent to that quantity of coal. The Forest Department has been asked to make the necessary arrangements to obtain the firewood through its contractors.

### CHINA

#### Protection Corps for Railways

The Central Railway Company, which controls the Shanghai-Nanking and Shanghai-Hangchow Railways, is organising a protection corps from among the people living near stations; to guard the latter against "bandits" (presumably guerrillas). To encourage the villagers to join, the company is supplying them with cheap foodstuffs, anti-mosquito incense, and other goods, and providing them with free medical treatment from an itinerant dispensary

van. This van will visit each of the various stations once a month.

#### New Greater Shanghai

The first important move in connection with the six-year plan for the reconstruction of Greater Shanghai at a cost of Y. 150,000,000 (nearly £9,000,000) is the building of a new Central railway station at Chenju, the second station out of Shanghai on the Nanking line. The railway part of the scheme is in the form of a five-year plan and is to cost Y. 10,000,000 in the first period. A line is to be built from the Central station to Jukong wharf, and modern hotels and shops are to be laid out round the station.

#### Japanese Shipping Monopoly in China Waters

A new steamer company known as the East Asia Maritime Transport Company has been formed with a capital of Y. 83,000,000 (nearly £5,000,000). It has taken over from the N.Y.K. (Nippon Yusen Kaisha) two steamers for the China-Japan ferry service, and a further ten are also to be handed over. Wharves, warehouses, and other buildings valued at about Y. 29,000,000 are also to change hands. The new concern will have a monopoly of Japanese shipping in Chinese waters. Its intention is to establish the Japanese terminus of the ferry service at Fukuoka instead of at Nagasaki as at present.

### SWITZERLAND

#### Closing of the National Exhibition

The Swiss National Exhibition at Zurich, which had been open since May 6 last, with a few days' interruption early in September when mobilisation was ordered, closed on October 29, when a total of 10,506,735 visitors was recorded. This remarkable figure represents nearly three times the population of Switzerland, and more than double the most optimistic estimates. Distinguished visitors have included the Lord Mayor of London and party, on an official visit, and more recently Mr. Grover A. Whalen, the Director of the New York World's Fair.

#### Plans for a Transport Museum

At an official luncheon on the closing day, the Mayor of Zurich, Dr. Klotli, raised a plea for the creation of a permanent Museum of Transport in Zurich, and announced that a committee had already been formed for the purpose of discussing the matter with the railways and other organisations, with a view to securing some of the exhibits which aroused considerable interest in the Transport Section and which may otherwise disappear. The nucleus of such a collection is already in existence at Zurich, where the main goods station houses the Swiss Railway Museum, opened towards the end of 1916 and containing numerous documents and models of historical interest. It may be hoped that a number of models from the National Exhibition will be preserved, and possibly the locomotive *Speiser*, of 1857, and the oldest Rigi Railway en-

gine, which were also shown at the Exhibition.

#### New Tunnel on the Line to Chur

In order to reduce curvature and improve the alignment of a section of the Zurich-Chur main line near Wallenstadt, 48.4 miles east of Zurich, the old Bommerstein tunnel is being replaced by a new one; the headings of the new tunnel met in the centre on October 27. The old tunnel and its approaches have been purchased from the Federal Railways by the Canton of St. Gallen, to form a part of the new Walensee highway, for a sum of fr. 400,000. The length of the new tunnel is 496 yd., and work upon it began in June last. It is expected to be completed by next summer, when the line will be diverted through it and the old tunnel handed over to the highway authority, an event of unusual interest. By this co-operation between road and rail interests, greatly improved communications with eastern Switzerland will be secured by both forms of transport.

### SPAIN

#### The Madrid-Burgos Railway

By a series of decrees dated October 7 and published in the Madrid *Boletín Oficial* of October 12, the Minister of Public Works is authorised to proceed with the construction, by contract, of the formation of several important lengths of Sections 1, 2, and 3 of the Madrid-Burgos direct line. The preliminary surveys of the line were approved in 1927 and the revised estimates were passed in September this year. The estimates for the sections in question will amount to 54,472,000 pesetas, or £1,362,000, and the expenditure is to be spread over four years.

### PORTUGAL

#### Railway Loans

Under Decree No. 29,951, recently issued, the railway companies may be authorised to obtain fresh capital for the acquisition of new rolling stock or reserves of material, by means of loans or other credit operations, secured on the gross receipts of the railway in each case. Not more than 20 per cent. of the receipts may be earmarked in this way. The decree is considered necessary owing to the fact that the laws of concession do not permit of any mortgage on the rolling stock, which reverts to the State, but some doubt is expressed as to the usefulness of the measure, as few of the railways, except perhaps the Portuguese Railway Company, are in a position to earmark an adequate portion of their earnings for such a purpose, and indeed, those that are most in need of new credit are actually working at a loss. It is thought that no such partial measure can remedy the present situation, while unrestricted road competition and rising fuel costs contribute to make the financial position of most of the railways more insecure every day.

## ASSOCIATION OF AMERICAN RAILROADS

*Work of the seven divisions forming the Operations & Maintenance Department*

THERE is no need to be widely read in U.S.A. railway literature to become familiar with the title of the Association of American Railroads, and the initials "A.A.R." by which familiarly it is designated. The association is even widely quoted outside railway circles, for its weekly statements of car loadings are studied as an index to U.S.A. business activity. These statements are prepared by the Car Service Division, one of the seven divisions in the association's Operations & Maintenance Department, which was the subject of a recent article in *The Mutual Magazine* (Pennsylvania Railroad).

The largest division in that department is the Operating-Transportation Division, organised in eight sections. The Operating Section, with its headquarters in New York, was formed in 1884, as a committee of the General Timetable Convention, to prepare a standard code of train rules. It became the Operating Division in January, 1919. At the present time the principal work of the section is the preparation, revision, and interpretation of the standard codes of rules for train operations, block signals, and interlocking. The Transportation Section is based at Chicago and is concerned mainly with keeping track of movements of vehicles in inter-railway service, and with the regulations and charges applying to the use of stock in such a manner. Also at Chicago is the Freight Station Section, which handles the problems and pools the experience of the railway companies' freight agents all over the country. This organisation was formed in 1888 as the American Association of Freight Agents, and became part of the A.A.R. in 1920. Of the other sections, the Medical & Surgical (formed in 1920) and the Fire Protection & Insurance are self-explanatory; the latter was organised in 1913 as the Railway Fire Protection Association, and became a section of the A.A.R. this year (1939). Little indication of the full scope of its activity is now given, however, in the title of the Protective Section, but the name of the body when it was formed in 1919—the American Chief Special Agents & Chiefs of Police Association—was more descriptive. Now it not only performs police work—and has reduced losses due to thefts of goods in transit from \$10,000,000 in 1921 to \$1,500,000 in 1938—but co-operates with the Safety Section (formed in 1921) in a campaign to educate children against carelessness on railway property. The Safety Section, with the Protective Section in New York, directs its campaigns for caution at public, employees, and trespassers. It has been carrying on a "Cross Crossings Cautiously" campaign for 18 years, and can claim a share of credit for reducing level crossing fatalities from 2,568 in 1928 (the peak year) to 1,517 in 1938. The remaining section in the Operating-Transportation Division is the Telegraph & Telephone Section at New York; this was established in 1882 as the Association of Railroad Telegraph Superintendents.

The Freight Claim Division (Chicago) began its existence in 1892 as the Freight Claim Association. It has the dual purpose of ensuring the prompt settlement of claims and their apportionment among the carriers concerned, and the minimisation of claims by preventing loss and damage. Close co-operation is maintained with large-scale consignors. Partly as a result of the division's work (for improvements to rolling stock must be taken into account as well), the average amount paid out in freight claims declined from \$2.35 a revenue loaded car in 1928 to 70 cents a car in 1938.

Mention has already been made of the Car Service Division, which has its headquarters at Washington. It was established in 1917 as the Commission on Car Service of the American Railway Association, and became the Car Service Division in 1920. In its work of supervising the flow of freight cars from railway to railway, it has wide powers to work with the Interstate Commerce Commission in holding up or diverting this traffic as industrial or agricultural conditions demand. This division takes charge when floods or storms call for relief work to be organised, in which case it assembles fleets of cars and despatches them where needed. The division has to anticipate rolling stock requirements, to facilitate which it promoted the formation in 1923 of regional shippers' advisory boards. Thirteen of these boards now cover the country and have quarterly meetings at which forecasts are made of rolling stock requirements for the ensuing quarter.

The Engineering Division is located at Chicago and has sections dealing with construction and maintenance, electrical apparatus, and signals. The first-named was formed in 1919 and carries on its work through the technical committees of the American Railway Engineering Association (organised in 1899). The section has as its objective "the safe and expeditious movement of rolling stock at minimum cost," to which end it co-ordinates the research efforts of the railways in such matters as sleeper preservation, boiler feedwater treatment, and the reconditioning by welding of worn parts and permanent way. Among problems at present under investigation are the effect on track of high-speed trains, and the heat-treatment of rail ends to minimise wear. The Electrical Section (at Chicago) was formed in 1906, and deals with problems concerned with the design and installation of transmission lines, third-rail bonds, clearances on electrified lines, and illumination. The Signal Section (at New York) was established in 1895 as the Railway Signaling Club.

The Mechanical Division (Chicago) was organised on March 1, 1919, by amalgamating the former American Railway Master Mechanics' Association (formed in 1868) and the Master Car Builders (formed in 1867). It deals with the design, building, maintenance and repair, interchange, and inspection of railroad vehicles, and is responsible for formulating numerous standard rules and practices in these directions. As examples, a single standard design has been adopted instead of 56 kinds of freight car axles, 58 journal boxes, 26 couplers, 20 brake shoes, and 27 different sorts of brake heads. An Electrical Section of the Mechanical Division was formed in 1937 and also has its headquarters in Chicago.

A natural collaborator with the standardising efforts of the Mechanical Division is the Purchases & Stores Division at New York, which was established in 1904 as the Railway Storekeepers' Association. It has effected great reductions in the purchase of supplies by publishing simplified lists covering 44 general groups of commodities, so that, as one example, the number of different sorts of carriage and machine bolts required by railway workshops has been reduced to under one third of what it was in 1926. The division also studies economical methods of storage, distribution, and reclamation or sale of scrap.

There remains in the Operations & Maintenance Department the Motor Transport Division, which was organised in 1928 and acts as a clearing house for information and experience gained by the railways in the use of road transport as an extension of their rail services.

## LATERAL FORCES ON RAILS

### *Use of piezo-electric effect to measure forces between locomotives and track in France*

WHEN the P.L.M. Railway (now South-Eastern Region of the S.N.C.F.) envisaged, in 1935, the operation of streamlined trains at speeds above the normal maximum of 120 km.p.h. (75 m.p.h.), the question arose as to whether, the track being suitable for the working, at 120 km.p.h. (75 m.p.h.), of Pacific locomotives weighing 97 tons, the stresses would be higher under trains hauled at 140 km.p.h. (87 m.p.h.) by Atlantic locomotives weighing 76 tons. An article describing the investigation carried out by the company was contributed to the *Revue générale des Chemins de fer* of June, 1937, by M. Chan, at that time Ingénieur Principal du Matériel of the P.L.M. Railway. The method adopted was that developed by M. Mauzin on the Paris-Orleans-Midi Railway, using piezo-electric (quartz) apparatus, which makes it possible to measure the forces between the wheels and frames of a running locomotive, and hence—excepting for the inertia of the axle—the lateral reactions between rail and wheel.

Tests carried out by this method show that the lateral rail stresses due to a relatively light locomotive of the P.L.M. Class "221.A" Atlantic, running at 140 km.p.h. (87 m.p.h.), are distinctly lower than those set up by a Class "231.D" Pacific locomotive running at 120 km.p.h. (75 m.p.h.). The tests also included determination of the increase in lateral forces with speed, measurements being made on the Pacific and Atlantic locomotives at 120, 130 and 140 km.p.h. (75, 81, and 87 m.p.h.). On the average, for both locomotives, the increase in lateral force was of the order of 18 per cent. on increasing from 75 to 80 m.p.h., and 25 per cent. on increasing from 81 to 87 m.p.h.

The quartz devices for measuring the lateral forces were mounted in the axleboxes between the cheek of the bearing brass and the box, Fig. 1. With this arrangement, the quartz is subjected to the lateral pressure between axle and frame, except for the friction of the brass in its box, which is low when running and similar in all tests. The first, second, third, and fifth axles in the 4-6-2 locomotive, and the first, second, third and fourth axles in the 4-4-2 locomotive (the fifth axle being inaccessible in this case), were thus equipped. The quartz in each right-hand axlebox measures the lateral force to the right, and that in each left-hand box the force to the left. Since only one of these forces can be operative at any given moment, a single centre-zero recorder is sufficient for each axle, the deflection being to one side or the other, according to which quartz is compressed.

Trials were made on the Héricy section of the Paris-Laroche line, which has curves of radii down to 500 m. (1,640 ft.), with locomotives of both types at maximum speeds of 120, 130, and 140 km.p.h. (75, 81, and 87 m.p.h.).

The recorded curves have deep and sharp serrations indicative of considerable sudden variations in lateral force, of short duration. Possibly, the instantaneous peaks of pressure recorded at the axlebox are not an absolute measure of those between flange and rail, but there is no reason to doubt the validity of the curves for purposes of quantitative comparison. The average lateral force for each track profile and each speed is obtained by calculating the mean ordinate from the planimeted area below the corresponding curve for a distance of about 1 km. (1,094 yd.) and averaging the results from all axles. Table I shows the average forces thus determined for the four axles studied in the "231.D" locomotive; also, the maximum instantaneous forces recorded. The average values afford the better indication of the increase in lateral forces with speed.

TABLE I—MEAN AND MAXIMUM LATERAL FORCES BETWEEN WHEEL AND RAIL  
Averages for 1st, 2nd, 3rd and 5th axles of "231.D" (4-6-2) locomotive, P.L.M. Railway

	Lateral force in tons at speeds in m.p.h.			
	68	75	81	87
<i>Straight track, at different mileposts—</i>				
(a) Mean .. .. .	—	0.35	0.40	0.52
Maximum .. .. .	—	4.2	4.6	7.7
(b) Mean .. .. .	0.25	—	0.35	0.45
Maximum .. .. .	3.1	—	6.2	6.9
(c) Mean .. .. .	0.19	—	0.33	0.45
Maximum .. .. .	3.6	—	6.3	7.4
<i>Curve of 2,300 m. (7,547 ft.) radius—</i>				
Mean .. .. .	0.19	0.29	0.43	—
Maximum .. .. .	3.9	5.4	6.5	—
<i>Curve of 1,200 m. (3,937 ft.) radius—</i>				
Mean .. .. .	0.45	—	0.63	—
Maximum .. .. .	7.4	—	6.9	—

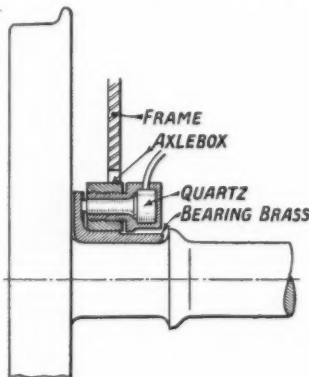


Fig. 1—Location of piezo-electric device between axlebox and bearing brass, for measurement of lateral forces between wheel and rail

The first trials with the "221.A" locomotive showed lateral forces amounting to 9.8-10.8 tons between wheel and rail at the third axle (crank axle) when running at 84-87 m.p.h. Increasing the slope of the restoring or centralising plane of the bogie from 15 to 20 per cent. increased the theoretical centralising force from 2.56 to 3.34 tons, but the maximum lateral force between wheel and rail at the third axle was still 8.35 tons. The peaks on the piezo-electric recorder chart occurred at intervals of 20 ft. 8 in., i.e., once per revolution of the wheel, whereas the periodicity of the forces due to the shouldering motion of the locomotive corresponds to several turns of the wheel. This observation led to the hypothesis that the excessive force resulted from imperfect balancing of the rotating masses, producing deformation of the axle and increasing the distance between flanges at one part of the circumference of the wheels.

Table II shows the highest mean and maximum forces observed in the whole series of trials with the "231.D" locomotive on straight or slightly curved track at the contemplated speeds of 130 and 140 km. (81 and 87 m.p.h.), and on curves of smaller radius at speeds already in use and below the authorised maximum. This summary leads to the important conclusion that operation at 87 m.p.h. on straight or slightly curved track imposes lateral forces on the rails which are substantially smaller than those

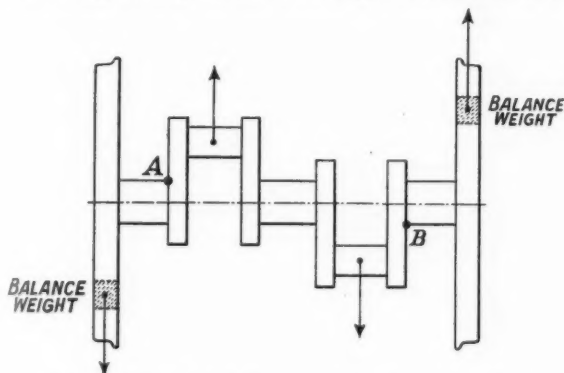


TABLE II—HIGHEST MEAN AND MAXIMUM LATERAL FORCES  
BETWEEN WHEEL AND RAIL FOR "231.D" LOCOMOTIVE AT  
DIFFERENT SPEEDS, P.L.M. RAILWAY

	On straight track and curves of 2,000-2,300 m. (6,562-7,546 ft.) radius		On curves of 3,281-5,906 ft. rad. at 72 m.p.h.	On curves of 2,953 ft. rad. at 68 m.p.h.	On curves of 1,969-2,297 ft. rad. at 65 m.p.h.
	At 81 m.p.h.	At 87 m.p.h.			
Highest mean force	Tons 0.58	Tons 0.52	Tons 0.73	Tons 0.73	Tons 0.82
Highest maximum force .. ..	7.4	7.7	9.8	11.4	13.5

already developed on curves of from 600 to 1,800 m. (1,969 to 5,906 ft.) radius. It is true that the trials were made with a train of only about 180 tons, but the observations so far indicate that the lateral forces at a given speed do not vary appreciably with the tractive effort.

Referring to Fig. 2, the centrifugal forces due to the

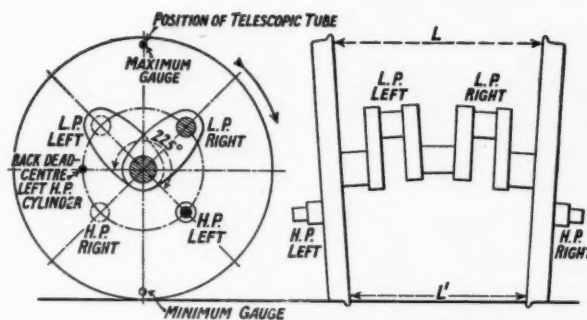


*Fig. 2—Centrifugal forces not in the same plane cause cracks at A and B*

eccentric masses (cranks and big ends), and to the balance weights in the wheels, are balanced as regards vertical load on the rails, but as they are not co-planar they establish bending moments which are responsible for cracks sometimes occurring at *A* and *B*. For some years past the crank axles of locomotives of classes "241.A" and "231.D" have been "auto-balanced" by balance weights in the same planes as the rotary masses to be balanced, but this has not hitherto been found necessary in "221.A" locomotives. Nevertheless, tests made with apparatus perfected by M. Mauzin, consisting of an indicating potentiometer measuring changes in length of a telescopic tube

TABLE III—LATERAL FORCES BETWEEN WHEEL AND RAIL IN PACIFIC AND ATLANTIC LOCOMOTIVES, P.L.M. RAILWAY

Locomotive	Speed	Lateral force between wheel and rail							
		Straight track		Curves of radius					
				6,562-4,921 ft.		3,937 ft.		2,297 ft.	
	M.p.h.	Mean	Maximum	Mean	Maximum	Mean	Maximum	Mean	Maximum
Pacific " 231.D " (4-6-2) ..	75 65	Tons 0.35 —	Tons 6.3 —	Tons 0.42 —	Tons 7.6 —	Tons 0.59 —	Tons 7.2 —	Tons — 0.82	Tons — 13.5
Atlantic " 221A " (4-4-2) ..	87 81 68	0.28 0.28 —	3.2 4.6 —	0.36 0.30 —	5.0 6.6 —	— 0.52 —	— 9.6 —	— — 0.47	— — 6.6



**Fig. 3—Diagrammatic representation of wheel displacement resulting from deformation of crank axle by unbalanced moments**

placed between the wheels, showed that considerable deformation actually occurs. The difference  $L-L'$  between the greatest and smallest distances between the wheels, Fig. 3, increased from 10 to 18 mm. ( $\frac{3}{8}$  to  $\frac{11}{16}$  in.), as the speed rose from 50 to 75 m.p.h. Without waiting for delivery of a newly designed "auto-balanced" axle, conclusive results were obtained by repeating the trials with the flanges of the wheels on the third axle reduced in thickness by 10 mm. ( $\frac{3}{8}$  in.), whereupon the maximum lateral force between wheel and rail was of the order of 4 tons, instead of 8 to 10 tons, on straight track at 75 m.p.h.

The maximum lateral force being thus reduced to a normal value, a full series of trials was made at various speeds, as in the case of the "231.D" locomotive. It was again found that the lateral force increased considerably with rising speed; and comparisons between the highest mean and maximum forces on various sections of track and at different speeds, tabulated on bases similar to those of Table II, led to the conclusion that: the lateral forces between wheel and rail in the "221.A" locomotive running at 87 m.p.h. on straight track or curves of 6,562 and 4,921 ft. radius are smaller than those developed at 68 m.p.h. on a curve of 3,937 ft. radius, and of the same order as those developed at 62 m.p.h. on a curve of 2,297 ft. radius.

Table III, comparing results for the two types of locomotives, shows that the lateral forces are substantially lower with the Atlantic at 81 and 87 m.p.h. than with the Pacific at 75 m.p.h., excepting for the italicised two values of maximum stress, which exception is of no importance in the general mass of test data. Later trials made with an "auto-balance" crankshaft in a "221.A" locomotive showed the lateral forces to be even lower than those in the "221.A" locomotive with reduced flanges. The conclusion from these trials was that a "221.A" locomotive could run safely on existing track at a maximum speed of 87 m.p.h. on the straight or on curves of more than 3,937 ft. radius, and 81 m.p.h. on curves of 2,953 to 3,937 ft. radius.

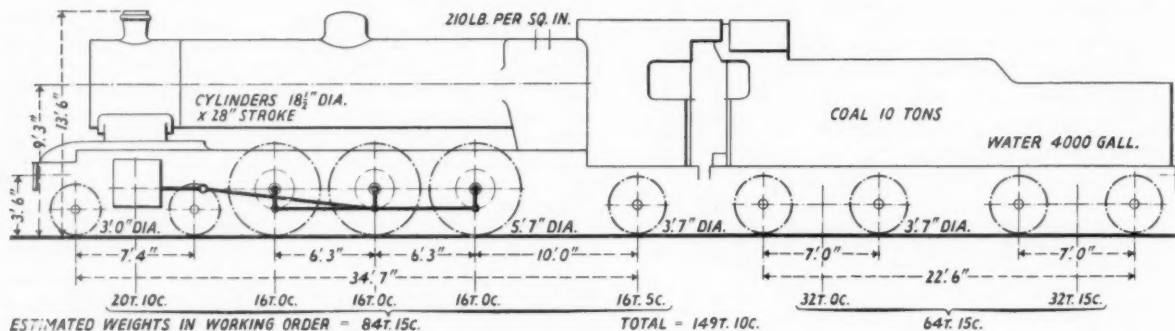
## NEW LOCOMOTIVES FOR INDIA

*These engines, which comprise five different types, are being built by the Vulcan Foundry Limited for the North Western, the East Indian, and the Great Indian Peninsula Railways*

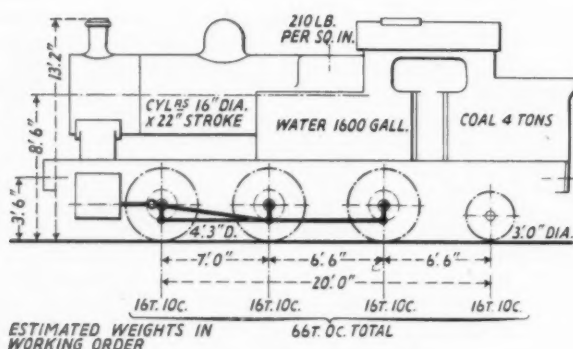
AN order for the construction of five different types of 5 ft. 6 in. gauge locomotives, totalling 26 in all, and constituting the "W" series, is at present being carried out by the Vulcan Foundry Limited, Newton-le-Willows, Lancashire, and of these the "WV" class 2-6-2 type side-tank locomotives are the first to be completed. The Indian Railway Board has decided to adopt this design as a prototype for a standard engine to perform duties intermediary between those of the existing "XT" 0-4-2 side tank and "XA" (branch) 4-6-2 type tender engines, and the new class is illustrated and described herewith. The other types, respectively designated

"WL," "WM," "WW," and "WU," comprise locomotives of the 4-6-2 type with tender, and 2-6-4, 0-6-2 and 2-4-2 type side tank engines, and of these diagram drawings with overall dimensions and weights are given herewith. A noteworthy feature of the construction of these locomotives is the duplication of details throughout the various types, covering the pony trucks for the "WV," "WM," and "WU" classes, all coupled axles and crankpins and the boiler mountings. The engines are being built under the supervision of Messrs. Rendel, Palmer & Tritton, Consulting Engineers, London.

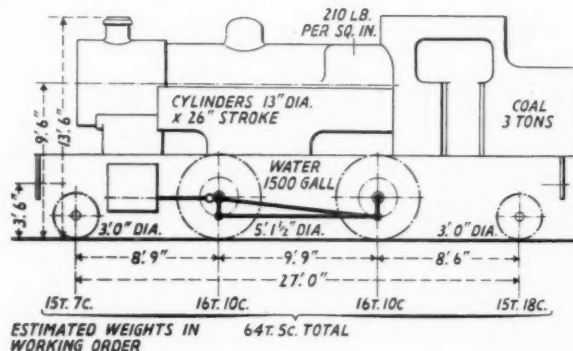
The 2-6-2 "WV" type engines illustrated herewith are,



Pacific type locomotive, "WL" class



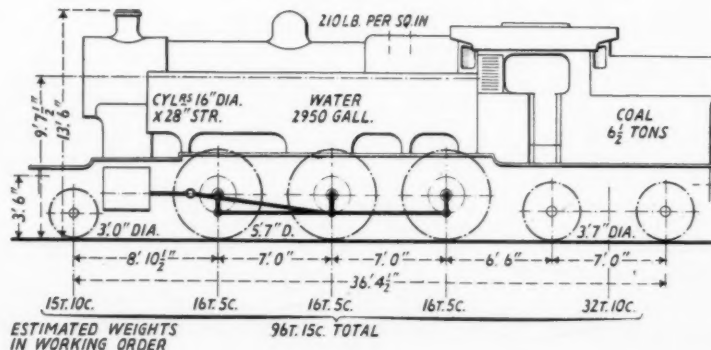
0-6-2 tank engine Class "WW"

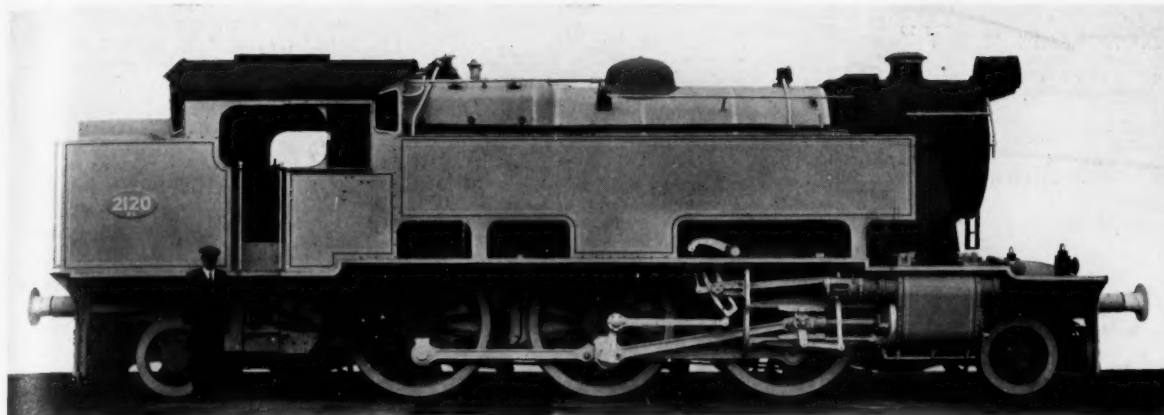


2-4-2 tank engine, Class "WU"

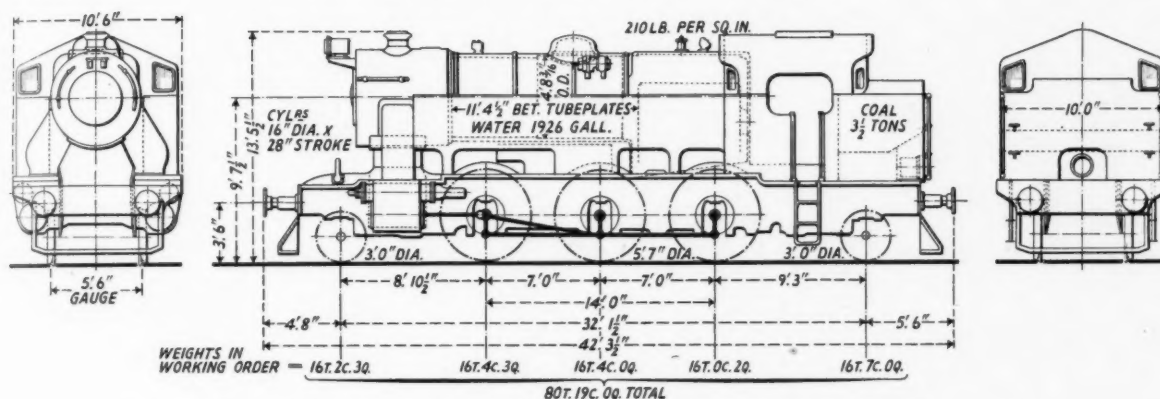
Right: 2-6-4 tank engine, Class "WM"

OUTLINE DIAGRAMS OF NEW  
INDIAN STANDARD LOCOMOTIVES





New Class "WV" 2-6-2 type side tank locomotive for the East Indian Railway  
(Built by the Vulcan Foundry Limited)



Outline diagrams showing main dimensions and weight distribution of "WV" class engine

as already stated, the first to reach a state of completion, and we were recently enabled to inspect them in the Vulcan Foundry works at Newton-le-Willows. They are able to negotiate curves of 573 ft. radius without gauge widening, and are being introduced for passenger service. In order to conform to Indian Government rules, particular care had to be taken in the design, so that the maximum permissible axle load of 16.5 tons should not be exceeded, and, in order to save weight, extensive use was made of welding throughout the engine. The tanks, cab, bunker, ashpan, smokebox saddle, truck frames, sandboxes, and all frame stretchers were fabricated, thus permitting an important reduction in the total weight of the engines.

The boiler is of the parallel type, with Belpaire firebox fitting between the frames. The inside firebox is of copper, with copper rigid water space stays and Flannery flexible stays in the breaking zones. The roof stays are direct with the exception of the four front rows, which are of the Flannery flexible type. The tubes are of solid drawn steel, and the superheater has an MLS multiple-valve regulator header. A steam stand is situated immediately in front of the cab, and this has connections for the injectors, ejectors, soot-blower, lubricators, blowers, turbo-generator, pressure-gauge and whistle steam cocks. The more important boiler fittings comprise two Ross pop safety valves, Clyde Mark VII soot-blower, Everlasting blow-off cocks and Klinger water gauges. The boiler feed is delivered through a top-feed clackbox by two Gresham

& Craven No. 8 non-lifting injectors. Alfol insulating covering is provided on the firebox back plate only, the remainder of the firebox and boiler barrel being left without insulating material. The ashpan is of the hopper type, with front and rear damper doors, and both the rocking and drop grates are hand-operated.

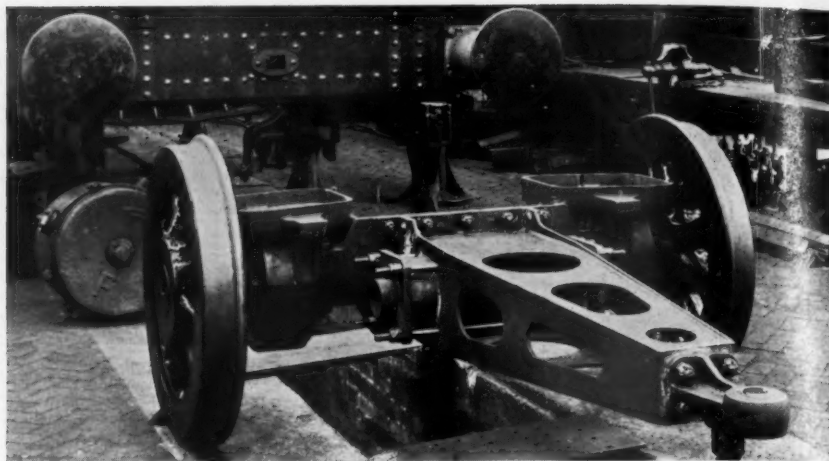
The front and rear plates of the cab are sloped backward at the sides and ample window spacing is provided. There is a folding driver's seat on the right-hand side. The electric lighting equipment, comprising generator, front and rear head lamps, and cab lights, are of the Sunbeam pattern, and the cab connections and fittings were manufactured by J. Stone & Co. Ltd.

#### Main Frames, Cylinders, and Motion

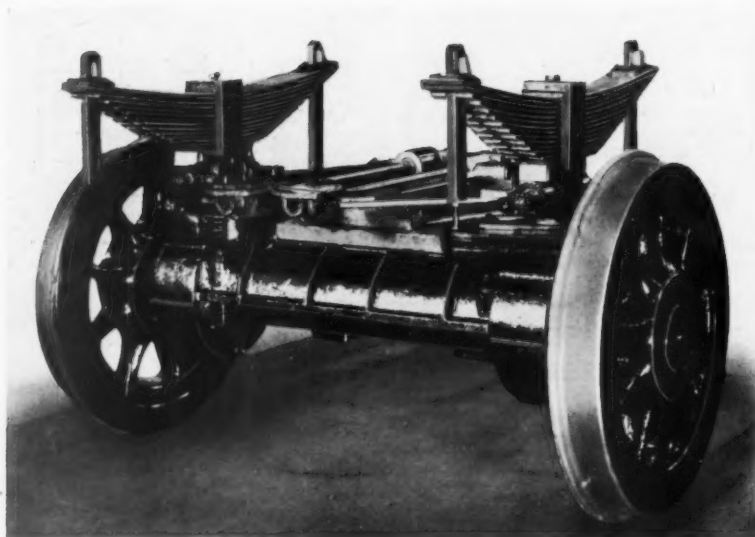
The main frames of the engine are built up of steel plates, with the fabricated plate stretchers previously referred to. An interesting feature is that the front end of the firebox is supported on rockers carried on the frame stretcher. These rockers permit of easy movement of the boiler under expansion, whilst as a further measure the boiler is carried at the rear end on a breather plate. The edges of the platform plates are folded, the edge angle being dispensed with to assist in further weight reduction. Other features worthy of note are the provision of manganese steel liners and Firthag steel wedges for the coupled axlebox hornblocks. The hornblocks are of the double flange type and two clips are used; the inner one grips



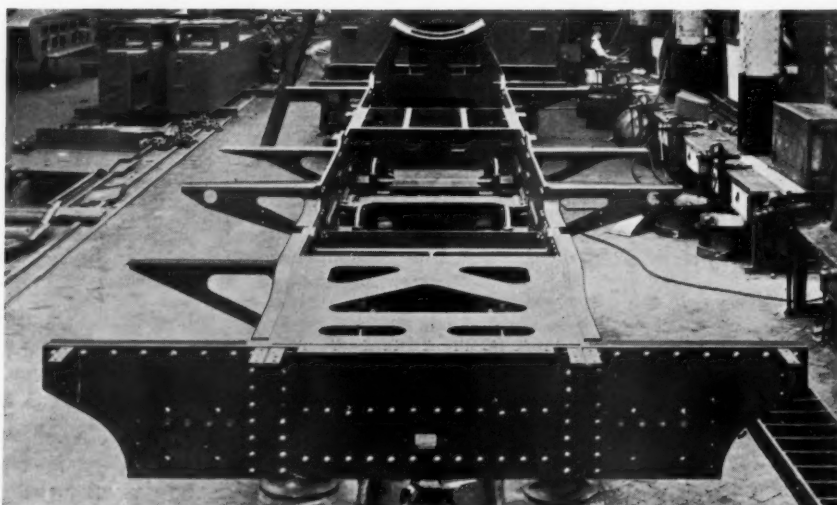
**New Class "WV"  
2-6-2 Tank  
Locomotive for  
India**



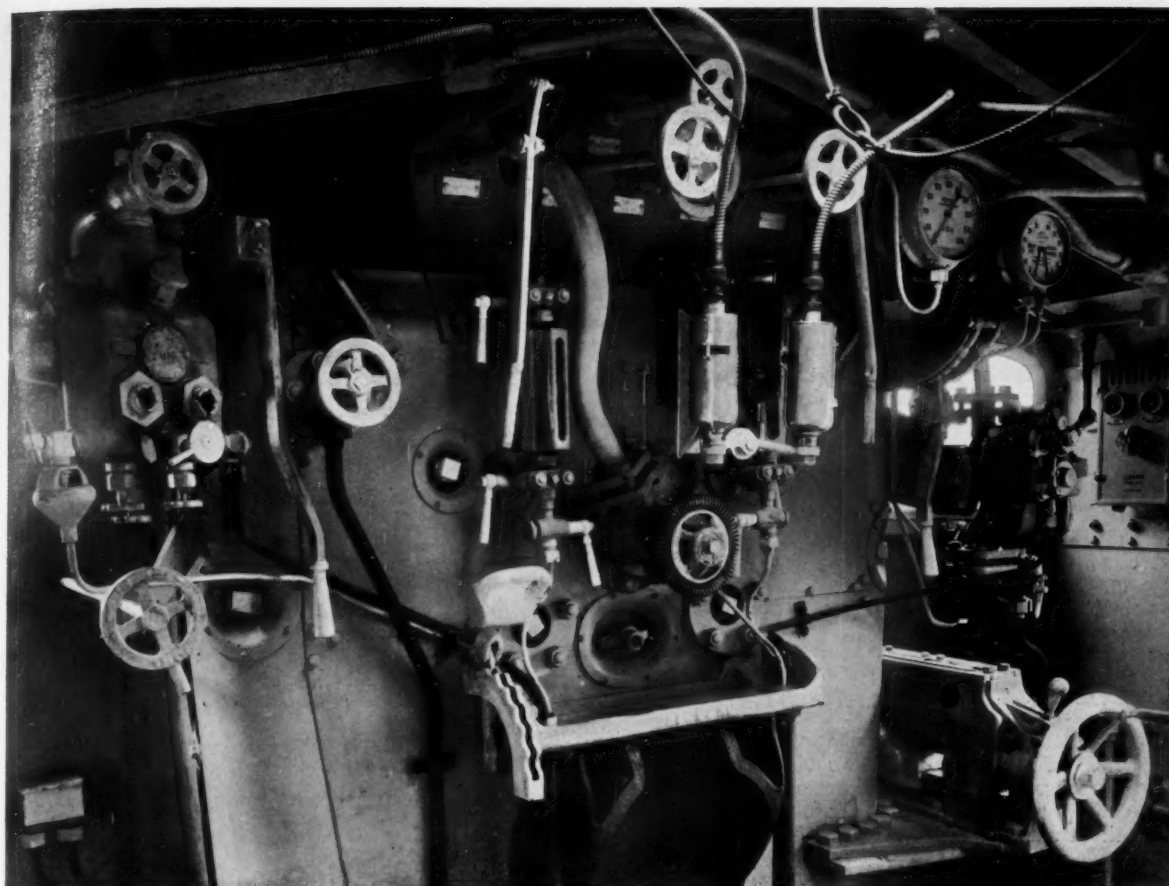
*Above: Partly assembled roller bearing pony truck showing radial arm*



*Left: Rear view of complete pony truck and S.K.F. cannon-type roller bearing axleboxes*



*Right: Main frames during erection*



Interior of cab with controls and fittings "WV" 2-6-2 type tank engine

the legs of the hornblocks and the outer one those of the frame. The coupled axleboxes are of I.R.S. bronze Class III, with grease lubrication.

The cylinders, which are fitted with liners of heat-treated Meehanite A, are placed outside the frames, and drive the second pair of coupled wheels. Lubrication is effected by a Wakefield AC type sight-feed lubricator with two feeds, located in the cab and provided with connections to the steam pipes, the capacity being three pints of oil. The piston heads and rods are of the M.O.B. type, and N-C bye-pass valves, also supplied by the firm of Wota Limited, are provided. Britallic packings are used for the piston rods. Steam distribution to the cylinders is effected by long-travel piston valves 8 in. diameter, actuated by Walschaerts valve gear, and all the motion pins are fitted with Hoffmann needle roller bearings lubricated with soft grease. The eccentric rod return crank bushes are equipped with S.K.F. spherical roller bearings, also soft grease lubricated. The balance weights in the coupled wheels are of the built-up type, formed with steel plates and lead fillings. The hub liners are of Meehanite B, and all the crank pins are made from Krupp's A2P steel; the trailing crankpin collars are of S.K.F. No. 3 steel. The coupling rods and the big ends of the connecting rods are fitted with floating bushes of I.R.S. Class IV bronze, and the fixed bushes are of Firthag steel. Hard grease lubrication is adopted for these bearings, and the connecting rod small ends are oil lubricated.

The front and rear trucks are duplicate in form and

have S.K.F. cannon-type roller bearing axleboxes. Silent-bloc bushes are fitted to the truck radial arm pins and bearing spring stirrup hinges, and the bearing shoe slides are of Ferobestos N.W.1. This material is also employed for the bearing washers of the spring stirrups and radial arm brackets, and the axlebox bearing plates are made of Nitralloy steel.

The tanks and bunker are of welded construction, and an interesting feature of the design is the provision of a third tank centrally placed immediately below the boiler between the frames, and connecting with the two side tanks. Vacuum and hand brakes are fitted, and a Wakefield hard and soft grease gun is provided for use in applying the grease for lubricating purposes. Oil is used for lubrication of the coupled axlebox guide faces and spring and brake gear.

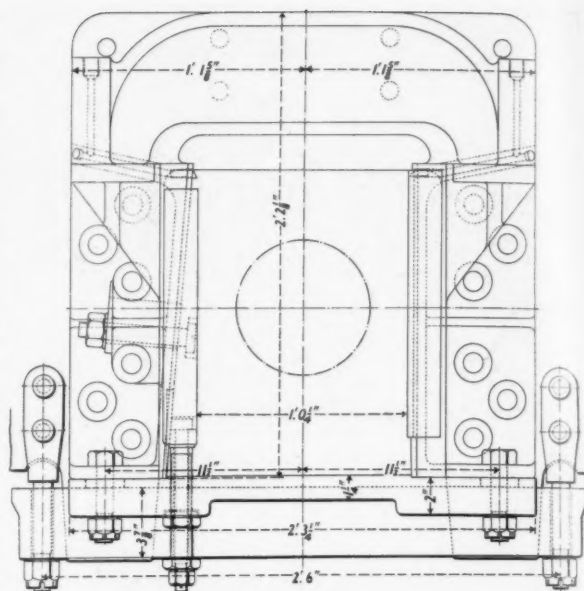
The main particulars of the locomotive are as follow:—

Cylinders (2), dia.	16 in.
"    stroke	28 in.
Wheels, coupled, dia.	5 ft. 7 in.
"    truck	3 ft. 0 in.
Wheelbase, rigid	14 ft. 0 in.
"    total	32 ft. 1½ in.
Boiler, working pressure	210 lb. per sq. in.
Heating surface, tubes (85)	506 sq. ft.
"    flue tubes (21)	328
"    firebox and arch tubes (2)	121
"    total (evaporative)	955
"    superheater	240
"    combined total	1,195
Grate area	24

The combined water capacity of the side and middle tanks is 1926 gallons, and the bunker holds 3½ tons of

coal. In working order the engine weighs 80 tons 19 cwt., of which 48 tons 9 cwt. 1 qr. are available for adhesion. At 85 per cent. of the boiler pressure the engine develops a tractive effort of 19,100 lb.

The 4-6-2 type "WL" class engines with bogie tenders are for the North Western Railway. This class has been adopted by the Railway Board as a prototype for a standard engine to perform duties intermediate between those of the existing "XA" (branch) 4-6-2 type and "XB" (light) 4-6-2 type engines. The "WM" class for the East Indian and G.I.P. railways comprise 2-6-4 type side-tank engines. This design embodies the major portion of the "WV" 2-6-2 side-tank engines, the only difference between the two being that a four-wheel bogie takes the place of the rear pony truck, thus making it possible to fit a larger bunker having increased coal and water capacities. The "WW" class 0-6-2 type side-tank engines for the North Western Railway is introduced as a prototype for a standard shunting engine to perform the duties of the existing six-coupled shunting engines in India. The "WU" class is a 2-4-2 type side-tank engine for the East Indian Railway, adopted as a prototype for a standard engine to perform duties intermediate between those of the "XT" 0-4-2 (side tank) and "XA" (branch) 4-6-2 type. As the diagram drawings show, a maximum axle load of 16.5 tons is worked to in all these designs.



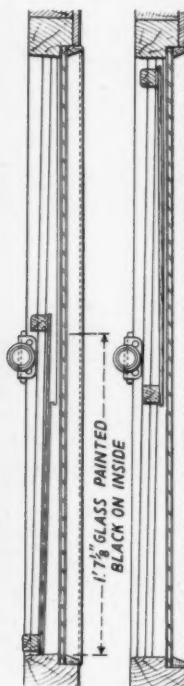
Arrangement of coupled-wheel axlebox

## MAIN-LINE TRAIN LIGHTING ON THE L.N.E.R.

THE introduction on November 20 of normal white lighting in the compartments of four Marylebone—Manchester trains, to which we referred last week, brought up to a total of 20 the number of L.N.E.R. main-line trains possessing such lighting. All these trains



Black-out shutters on corridor windows, L.N.E.R. The lower part of the glass is blackened and the upper part left clear. After dark the sliding shutters are raised to cover the latter. In the picture, the first window has been blacked-out, the next two are as arranged for daylight travel. The cross sections show how the sliding shutters work



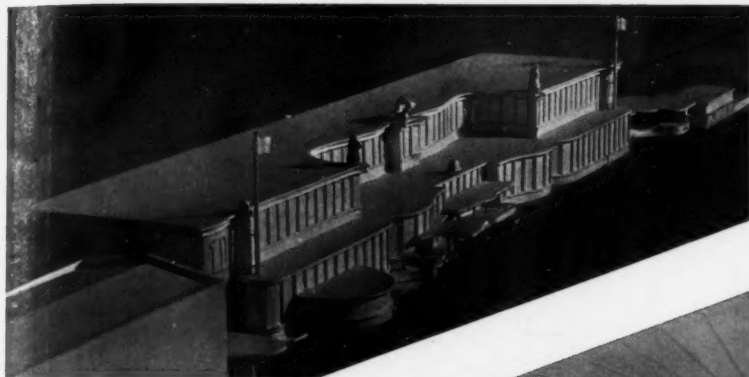
Interior of compartment showing blind lowered at night

are formed entirely of end-door carriages. The provision of full lights in the compartments in accordance with pre-war standards has been made possible by fitting special rubber blinds over compartment windows having blackened edges, and sliding shutters over the corridor windows. Blue lights are retained in the corridors and lavatories, but the fitting of the new shutters makes it unnecessary for the compartment doors leading to the corridor to be kept closed or covered. By courtesy of Sir Nigel Gresley, Chief Mechanical Engineer, L.N.E.R., we are now able to reproduce three illustrations giving a good idea of the arrangements. An attendant travels with every train to ensure that the lighting restrictions are observed, and a master lighting switch controlled from the guard's van is used to extinguish all white lights in the event of an air raid warning being given. Altogether 427 L.N.E.R. main-line coaches are being equipped, involving 3,600 corridor shutters and nearly 2,800 special blinds.



## Dutch Railway Architecture

(Some recent designs by S. van Ravesteyn. See editorial on page 694)



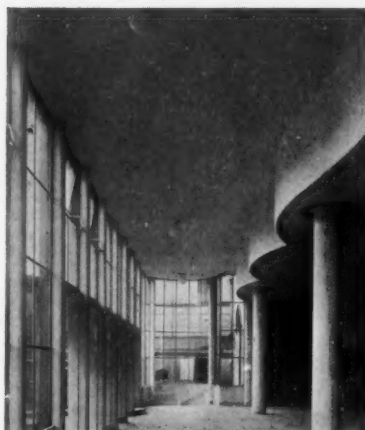
Left : Model of the new Utrecht Central station buildings



Reinforced concrete signal box. A good example of shaped work



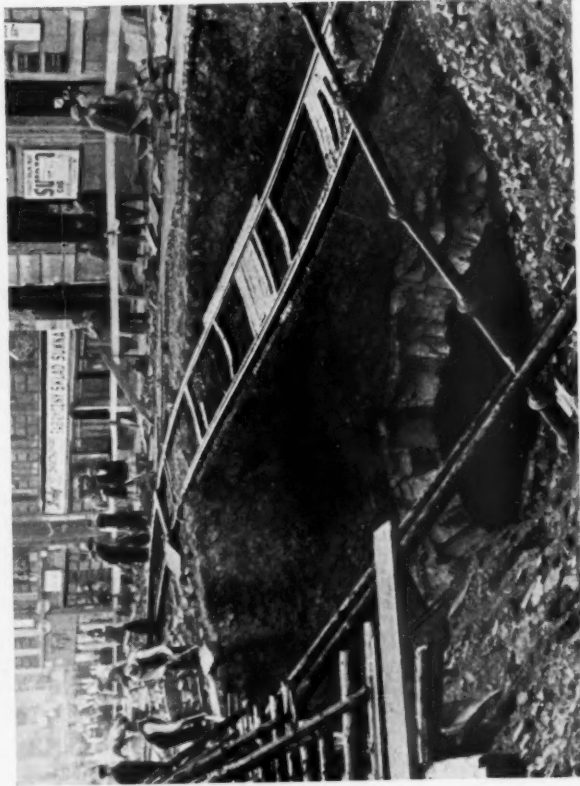
Restaurant at Utrecht Central station. Curved features predominate. The delicate treatment of the ceiling will be noted



Two views of the booking hall at Utrecht Central station. Curves are used extensively. A well-lighted concourse, but the capless columns give the effect of passing through the ceiling rather than supporting it



*A big naval gun, ready for despatch, about to leave the works*



*The result of an aerial bomb explosion in a street at Bielsko (Bielitz) in Polish Silesia. The picture was taken in September and shows how the bomb has penetrated to the tunnel under the street which carries the railway from Działdowo to Żywiec*



**G.W.R. RESTAURANT CARS AS TEMPORARY OFFICES**

Two views showing Great Western Railway clerks at work in a restaurant car "somewhere in the country," providing an interesting example of the satisfactory adaptation of accommodation to another purpose than that for which it was designed. Typewriters and letter files displace the "roast beef and two veg," from the tables; personal luggage gives way to ledgers on the racks; and the restaurant car attendant is replaced by the office messenger

## RAILWAY NEWS SECTION

### PERSONAL

#### G.W.R. CHIEF ENGINEER

The directors of the Great Western Railway have approved the appointment of Mr. Allan S. Quartermaine, M.C., B.Sc., M.Inst.C.E., as Chief Engineer in succession to Mr. Raymond Carpmael, who is retiring at the end of the year.

Mr. Charles Douglas Stanley has been appointed Chairman of the Yorkshire Woollen District Transport Co. Ltd., in succession to the late Mr. W. S. Wreathall. Mr. Stanley is a member of council of the British Electrical Federation, and director of a number of railway-associated bus undertakings.

Mr. L. F. A. d'Erlanger has been elected to the board of directors of the British South Africa (Chartered) Company.

In the recently-issued report of the Assam Railways & Trading Co. Ltd. it is announced that the directors have elected Mr. Balfour Smith, until recently a partner in the firm of Macneill & Company, the company's agents in Calcutta, to a seat on the board, in place of Mr. James Mackenzie, who is retiring.

Mr. C. W. G. Elliff has been appointed a Director of Devon General Omnibus & Touring Co. Ltd. in place of Mr. J. C. Chambers, who has resigned.

Mr. G. L. Anderson, who has been attached to the Staff Division in the head office at Wellington for nearly 20 years, has been appointed Assistant Staff Superintendent of the New Zealand Railways. He succeeds Mr. A. J. Levick, who was recently appointed Staff Superintendent. Mr. Anderson joined the railways service in Auckland in 1902, and received his early training in that district. He was appointed Assistant Relieving Officer in 1913, and, after serving in that capacity for two years, was appointed Staff Clerk in the office of the District Traffic Manager, Auckland. After five years in Auckland, Mr. Anderson was transferred to the head office, Wellington, where he was attached to the Staff Division, and has occupied in turn the position of clerk, senior clerk, and staff assistant.

We regret to announce the death at Vancouver, B.C., on November 20, of Mr. Robert Wilson, General Manager and Comptroller, Pacific Great Eastern Railway.

Sir Edward Wentworth Beatty, G.B.E., K.C., LL.D., Chairman and President of the Canadian Pacific Railway, whose portrait we reproduce this week, was recently appointed Controller of Shipping for Canada, as we announced in our issue of October 27. Sir Edward was born on October 16,



**Sir Edward Beatty, G.B.E., K.C., LL.D.**

Chairman and President, the Canadian Pacific Railway, appointed Controller of Shipping, Canada

1877, at Thorold, Ont., and took up study of the law at the University of Toronto. He began his career with the Canadian Pacific Railway in July, 1901, as an assistant in the law department. After 12 years he became General Counsel. His rise thereafter was rapid and, upon the retirement of Lord Shaughnessy in 1918, he was selected by the board of directors to succeed him. He is the first Canadian-born President of the Company. He succeeded the late Mr. Bosworth as Chairman of the Canadian Pacific Steamship Company in 1925. The honour of knighthood was conferred upon him by the King in July, 1935.

For the first time in the history of the Canadian naval units, an honorary commission in the Royal Canadian Volunteer Reserve was issued in January, 1938, when Sir Edward was gazetted Honorary Captain and attached to the Montreal Division, R.C.N.V.R.

Special interest will doubtless attach to an article in our Overseas Number, published this week, which Sir Edward wrote specially for us as recently as the beginning of November.

#### CANADIAN NATIONAL RAILWAYS APPOINTMENTS

Mr. H. A. Dixon, Chief Engineer of the Western Region, Canadian National Railways, has been appointed Chief Engineer of Operation for the System, to take effect on January 1, 1940, in place of Mr. C. B. Brown, who is retiring. Mr. Dixon was born at Sand Hill, Ontario, 1878, and joined the Canadian National Railways as a draughtsman in 1903, subsequently becoming Resident Engineer at Winnipeg.

Mr. H. C. Carrington has been appointed Insurance Commissioner, Canadian National Railways, with office at Montreal, in succession to the late Mr. William Y. Muirhead.

The following Western Region changes result from the death of Mr. A. E. Warren, Vice-President in Charge of Western Lines, Winnipeg:—

Mr. W. R. Devenish, General Superintendent of Transportation, becomes General Manager of the Region. He was born in Ireland and educated at St. Columbus College and Trinity College, Dublin. He became General Superintendent of the Alberta District in 1928, and in 1936 was appointed Chief of Transportation.

Mr. W. C. Owens, General Superintendent of the Alberta District, succeeds Mr. Devenish as General Superintendent of Transportation.

Mr. J. H. McKinnon, Superintendent of the Calgary Division, succeeds Mr. Owens, and Mr. Sherman Smith, Assistant Superintendent of the Edmonton Division, succeeds Mr. McKinnon.

We regret to record the death at the age of 73 of Sir John Rumney Nicholson, C.M.G. Sir John began his career in 1883 with the now defunct firm of locomotive and marine engine builders, Black, Hawthorn & Co., of Gateshead-on-Tyne. From 1888 to 1889 he was in charge of the erection of plant and buildings at Pandon Dene, the first power station of the Newcastle-on-Tyne Electric Supply Company. In



1889 he became Assistant Engineer of the Quebrada Railway & Copper Mines, Venezuela, and in 1891 was made Chief Mechanical Engineer of this undertaking and also the South Western Railway of



**The late Sir John Nicholson, C.M.G.**

Chief Engineer for Docks, L.N.E.R.  
1923-1927

Venezuela. Sir John was associated with the firm of consulting dock and railway engineers, P.W. & C.S. Meik, from 1895 to 1899, during which period he designed the locomotives, rolling stock, and other plant for the Port



**Mr. J. Ness**

Appointed Assistant to the Divisional General Manager, Scottish Area, L.N.E.R.

Talbot Railway & Docks, and was Resident Engineer of the graving docks at Port Talbot. From 1899 to 1902 he was Chief Engineer of the Bridge-water Trust and was then appointed Managing Director and Chief Engineer of the Tanjong Pagar Dock Company, Singapore. When this company's pro-

perty was acquired by the Government in 1904, Sir John became Chairman and Chief Engineer of the Singapore Harbour Board and of the Penang Harbour Board. He was created C.M.G. in 1913 on the completion of the King's Dock, Singapore, which was then the largest graving dock in the world, and Knight Bachelor in 1919 when the Singapore dock scheme of reconstruction and extension was completed. In 1920 Sir John returned to England to take up the position of Chief Engineer for Docks, with the North Eastern Railway, and on the amalgamation of railways in 1923 he was appointed Chief Engineer for Docks for the London & North Eastern Railway. He retired from this position in 1927, remaining, at the request of the directors, consulting engineer for docks for two years.

Mr. J. Ness, Assistant to the Divisional General Manager (Traffic), Scottish Area, L.N.E.R., has been appointed Assistant to the Divisional General Manager, Scottish Area, in place of Mr. F. W. Lamb, who retired at the end of November. Mr. Ness began his railway career in Scotland and then moved south to the North Eastern Area and to the Chief General Manager's Office. In 1929 he became Head of the Dock Section in the District Goods Manager's Office, Hull, and in 1932 he returned to Scotland as Chief Assistant to the District Goods & Passenger Manager at Dundee. Mr. Ness was appointed Assistant to the Divisional General Manager (Traffic), Scottish Area, in 1937.

Mr. F. W. Lamb, Assistant to the Divisional General Manager (Scottish Area), L.N.E.R., retired on November 30, after completing a service of over 46 years. He began his career in the General Manager's Office of the North British Railway in 1893 (after obtaining an insurance and commercial training) and subsequently became Senior Clerk in charge of traffic and general matters. During this period the amalgamation of the railways was carried through, resulting in the North British Railway being absorbed into the East Coast Group, and on the formation of the London & North Eastern Railway on January 1, 1923, the General Manager for Scotland took over the supervision of the Great North of Scotland Railway in addition to the N.B.R. After experience in different sections of the office, Mr. Lamb was appointed Chief Clerk. He held this position until August 14, 1930, when he became Assistant to the Divisional General Manager which position he has just relinquished. Prior to the grouping of railways, Mr. Lamb acted for a number of years as Secretary to the Scottish Railway General Managers' Conference, as well as the North British and Caledonian Companies' General Managers' Conference. He was also Honorary Secretary of the North British Railway War Relief Fund.

Mr. Percy Syder, London City Manager of the London & North Eastern Railway, retired on November 30. He was born at Fakenham, Norfolk, in 1879, and was educated at King Ed-



**Mr. Percy Syder**

London City Manager, L.N.E.R.,  
1926-1939

ward VI School, Norwich. He entered the service of the Great Eastern Railway in 1896 when he was given an appointment in the Goods Manager's Rates Office. In 1900 he became South Country Canvasser to the G.E.R., and



**Mr. F. W. Lamb**

Assistant to the General Manager, Scottish Area,  
L.N.E.R., 1930-1939

three years later was appointed its representative on the London Coal Exchange, in which capacity he had to meet and deal with all the large firms connected with the London coal trade. Mr. Syder became Chief Traffic Canvasser in 1911 and two years later secured the position of Chief Com-

mercial Agent. This involved the supervision of the G.E.R. agencies in the North, Midlands, and Scotland, and of the company's interests at agricultural shows, and the Corn, Wool, and Coal Exchanges. In 1915 Mr. Syder was appointed District Goods Manager at Ipswich, and two years later was transferred to London as Divisional Commercial Superintendent. Consequent on the shortage of rolling stock after the war, the directors of the G.E.R., in 1920, appointed Mr. Syder to take charge of all matters relating to the manipulation of full and empty wagons, including repairs to crippled stock. He was directly responsible to the General Manager, Sir Henry Thornton. He also had charge of the company's motor transport. Mr. Syder was appointed London City Manager in 1926 when he became responsible for the goods com-

turned to the G.W.R. in 1919, Mr. Prosser was appointed Chief Clerk to the Traffic Manager for South Wales, and in 1921 he resumed charge of the Excursion Department and continued in this position until his retirement in 1930. Among his other activities Mr. Prosser was on many occasions Chairman of the Excursion Representatives' Conference at the Railway Clearing House. The interment took place on November 24 at Paddington Cemetery, and was attended by a number of Mr. Prosser's former colleagues including Mr. F. R. Potter, the present Superintendent of the Line, G.W.R., and Mr. R. H. Nicholls, who formerly occupied that position.

We regret to record the death on November 26, at the age of 77, of Mr. F. V. H. Seale. Mr. Seale joined the

staff of Messrs. Price, Waterhouse & Co. over 57 years ago, and for many years was Manager in charge of railway audits, which included such famous pre-grouping systems as the L.N.W.R., N.E.R., G.E.R., G.N.R., S.E.R., L.B.S.C.R., and also the South Eastern & Chatham Railway Companies Managing Committee. During the last war, he was Chief Assistant to the late Sir Albert Wyon in his work connected with the Government control of the British and Irish railways. After the railway amalgamation in 1923 Mr. Seale was associated with the audits of the L.M.S.R., the L.N.E.R., and the Southern Railway.

The L.M.S.R. announces the appointment of Dr. J. L. Martin, M.A., Ph.D., A.R.I.B.A., to be Principal Assistant Architect.



**The late Mr. J. D. Prosser**  
Formerly Head of Excursion Department,  
Superintendent of the Line's Office, G.W.R.

mercial work in the city. Mr. Syder has always taken a very keen interest in staff welfare and in philanthropic matters. During the last war he collected £5,000 towards the free buffet for soldiers and sailors at Liverpool Street. He has also been an active worker for the Railway Benevolent Institution and the United Kingdom Railway Officers' and Servants' Association.

We regret to record the death on November 22 of Mr. J. D. Prosser, who was formerly in charge of the Excursion Department of the Superintendent of the Line's Office, Great Western Railway. Mr. Prosser joined the G.W.R. in 1887, and, after experience in the commercial sections, spent some time in the timetable office. He subsequently joined the newly-formed Excursion and Tourist Department, and took charge of it in 1911. During the last war he was loaned to the Admiralty as a transport officer. When he re-

## STAFF AND LABOUR MATTERS

### Railway Shopmen

The employees' side of the National Railway Shopmen's Council at a meeting on Tuesday, November 22, the day after the meeting of the full council, decided to submit a claim to the railway companies for a general increase of 10s. a week in the wages of railway shopmen, with a minimum wage of 50s. a week. The trade unions had previously submitted a claim for an increase in wages without stating any amount, and apparently were asked to state the amount they were claiming when the matter was discussed at the meeting of the Shopmen's Council on November 21.

### Road Transport Wages

On Thursday, November 23, representatives of the Transport & General Workers' Union met the management of the London Passenger Transport Board in pursuance of the decision to claim higher wages in all sections of the road passenger industry. The board promised to review the facts and arguments and to meet the union again at an early date. On Friday, November 24, claims for wage increases for employees of municipally-owned road passenger services were considered by the joint industrial council for the industry. No specific amount was claimed by the Transport & General Workers' Union, but it was urged that more pay was necessary in view of the rising cost of living, and the conditions under which the men are now working. The claim was referred to the emergency committee.

### Electrical Contracting Wages

Under an agreement reached on November 22, workers in the electrical contracting industry will receive an increase of 5d. a week for every one point increase in the official cost of living index. The agreement is between the Electrical Trades Union and the National Federated Electrical Association. The cost of living allow-

ances will be paid irrespective of the hours worked in any one week.

### Building Trade Wages

The National Joint Council for the Building Industry decided, on November 22, that wage rates should be increased on December 1 by  $\frac{1}{4}$ d. an hour for craftsmen and labourers alike. The increase is in respect of the rise in the cost of living and is the outcome of an arrangement to vary the operation of the industry's cost of living sliding scale for the period of the war. Normally cost of living wage adjustments are made at the beginning of every year, and are based on the index figure for the preceding 12 months. Although, therefore, the time for revision had not been reached, nor did the figures of cost of living changes during the first 10 months of the year themselves warrant an increase of wages, as provided for in the industry's sliding scale, the circumstances were held by both sides to be exceptional. In future there will be a review of wages every four months instead of annually. There are about 1,000,000 building trade workers.

### Cable Maker's Wages

Higher wages for workers in the cable-making industry have been agreed to by the National Joint Industrial Council, which met in London on November 22. As from the third payday in November pieceworkers will receive an additional 1s. 10d. a week in London and an additional 1s. 9d. in other areas. In the third week in December pieceworkers will receive further advances of 1s. 10d. and 1s. 9d. respectively on account of the rising cost of living. Time workers, because of the higher cost of living, will receive in the third week in December an increase of  $\frac{1}{4}$ d. an hour in London and about the same outside London. This will make the men's minimum in London 60s. 8 $\frac{1}{4}$ d. and outside London 55s., and the women's 30s. 6d.

## TRANSPORT SERVICES AND THE WAR—14\*

*Methods of announcing timetable changes—Brighter stations and waiting rooms—More canteens for Servicemen—Lighted suburban trains on the L.M.S.R. and L.N.E.R.—L.M.S.R. timetable changes next Monday*

In the week-by-week preparation of our articles on Transport Services and the War, we have been impressed by the magnitude of the task which the British railways have been, and are being, asked to perform as an important part of the national war machine. Some indication of this has been given in our notes, but we are acutely conscious of the inadequacy of the details which it is permissible and politic to publish during the course of the war. It is therefore with pleasure that we are now able to state that full informa-

latest periods the returns showed that the L.M.S.R. had conveyed more freight traffic than ever before in its history, and this under conditions which, though improving daily, presented many difficulties. "The number of loaded wagons which we are handling is rising daily," he added. "The total L.M.S.R. daily quota, if placed end-to-end, would stretch from London to Carnforth, a distance of 236 miles. Wagons standing in depots, docks, and sidings, for loading and discharging, quite apart from those in transit on trains,

LNER		
EMERGENCY SERVICE		
MAIN LINE DEPARTURES		
From MARYLEBONE		
2nd October, 1939 until further notice		
DAILY (including Sundays)		
Time of Departure	Platform No.	FOR
4.40	4	Woodford & Hinton, Rugby, Leicester, Nottingham, Sheffield. Connection for Penistone, Barnsley, Guide Bridge, Manchester (London Road)
2.30	4	Rugby, Leicester, Arkwright Street, Nottingham, Sheffield. Connection for Penistone, Huddersfield, Halifax, Bradford, Manchester
10.0	4	Aylesbury, Woodford & Hinton, Rugby, Leicester, Loughborough, Nottingham, Chesterfield (Cent.), Sheffield, Penistone, Guide Bridge, Manchester (London Road). Connection for Huddersfield, Halifax, Bradford
5.0	4	Aylesbury, Woodford & Hinton, Rugby, Leicester, Loughborough, Nottingham, Chesterfield (Cent.), Sheffield, Penistone, Guide Bridge, Manchester (London Road). Connection for (SuX) Huddersfield
10.0	1	Aylesbury, Woodford & Hinton, Rugby, Leicester, Loughborough, Nottingham, Sheffield, Godley Junction, Guide Bridge, Manchester (London Rd.). Connection for Stockport, Warrington, Liverpool
10.45	2	Aylesbury, Leicester, Sheffield, Godley Junction, Guide Bridge, Manchester (London Road). Connection for Stockport, Warrington, Liverpool
10—Sundays only. 15—Sundays and Sundays excepted. 20—Sundays only. 25—Sundays excepted.		

Printed terminal departure sheet. Stops are shown in heavy type, connections in light type

# EMERGENCY TIMETABLE

TRAINS FOR KING'S CROSS  
FROM THIS STATION

WEEKDAYS			SUNDAYS		
A.M.	A.M.	P.M.	A.M.	P.M.	
2	10	5	5	3	
3	11	6	6	4	
4	12 <sup>PM</sup>	7	7	5	
5			8	6	
6	1	8	9	7	
7	2	9	10		
			11	8	
8	3	10	12 <sup>PM</sup>	9	
9	4	11	1	10	
			2	11	

1. K. Services accepted

10. Services only

2. Termination at Embury Park - see notice there  
for King's Cross



for the emergency. Simultaneously with the introduction of the reduced train service, printed train departure sheets were posted at the termini. All other stations were supplied with blank sheets; the information on these was compiled and inscribed by the station staffs. Our first illustration shows an example of departure sheets produced in respect of the more important stations. In the provinces compilation was arranged locally to expedite production, and the printing was also arranged locally, based on a simple standard setting which the L.N.E.R. is using during the emergency. By the use of differently coloured inks, introduced for the guidance of station staffs, the company is indicating the currency of a bill. The departure sheets on the outbreak of war were printed black; October amendments were in green; and November bills in "Coronation red." The December sheets are being produced in blue. In the London suburban area, where the trains to London are comparatively frequent, "large figure" sheets have been supplied, with the hours from 2 a.m. to 11 p.m. on week days, and 5 a.m. to 11 p.m. on Sundays, already printed. Spaces are left at the side for the insertion of minutes according to the departure from a particular station. References are printed at the bottom and used by the staffs when compiling the sheets. To the small stations blank sheets have been supplied for inscribing by the station staffs. There is sufficient room for information regarding 22 trains. It will be seen that the layout is similar to that of the printed departure sheets.

#### Brighter Stations and Waiting Rooms

Determined efforts to alleviate the blackout at stations are being made by the British railways. They have appointed special staff to examine the existing lighting, heating, and other conditions in waiting rooms generally, and especially in those at terminal and junction stations where members of H.M. Forces may have to wait for their connections. Larger and warmer fires, subject always to the limitations of rationing, adequate blacking out of windows so that full lighting can be used, additional lighting, and possibly extended buffet services where available, are being arranged. Passenger carriages have been placed in convenient positions at certain junction stations for use as rest rooms by members of H.M. Forces wherever possible. A member of the station staff is made responsible for seeing the men are called in good time to catch their train. Normal lighting is being restored in railway refreshment rooms wherever circumstances permit, and special arrangements have been made for the provision of meals for the large numbers of H.M. Forces who are travelling. This has necessitated keeping the refreshment rooms open for far longer hours than in peacetime. In some instances the refreshment rooms now never close. The railways are serving many thousands of meals every week to members of the Forces who present a Government voucher.

One of the chief complaints against the blackout is the difficulty travellers have in reading the names of stations. This question is receiving special attention, and it is hoped to devise some means of illuminating station names which will not contravene the lighting regulations. The station staffs are instructed that they must announce clearly the name of the station as soon as a train stops, and before it re-starts announce the name of the next stopping station. Where loud speakers are installed, the announcers during blackout hours frequently tell passengers the time, in addition to informing them of the platform and time of departure of the next train. One announcer at a large suburban station always adds "and don't forget your gas masks, ladies." Loud speaker equipment is being installed at a number of additional stations throughout the country. Platform edges, steps, pillars, and kiosks are regularly whitened to assist travellers during darkness, and in some cases castellated or chequered.

#### Services Hostel at York Station

On November 22 Dr. Temple, Archbishop of York, as President of the York Council for Wartime Service, opened a Services hostel at York station, where members of His Majesty's Forces who have to wait through the night for connecting trains can rest. The hostel, which will be run by the Salvation Army, is provided with sleeping bunks, equipped with

mattresses and blankets, for 57 men. There is also a small reception room and a wash room fitted with hot and cold water. Major-General E. C. Gepp, in charge of administration, Northern Command, who presided, said the York Council for Wartime Service had already done a great deal for the troops. He congratulated Adjutant Goddard for what the Salvation Army had done for the hostel and also thanked Mr. C. M. Jenkin Jones, Divisional General Manager, North Eastern Area, L.N.E.R., for the accommodation and its conversion into the hostel. The Archbishop of York then opened the door of the hostel with a special key presented to him by General Carpenter, the new head of the Salvation Army.

#### Canteens for Servicemen

Further information is now available concerning the provision by charitable organisations of canteen and rest facilities for Servicemen at railway stations and in the immediate vicinities. At the moment the Church Army has two stations covered by canteens, namely, Snow Hill and New Street, Birmingham. These canteens are actually now operating, but they will not be opened officially until December 9. The Church Army hopes later to operate at Reading (Southern Railway) and other centres. Arrangements are being completed to open a canteen immediately in Central station, Glasgow. As in the last war, the canteen will be under the control of the Y.M.C.A. The opening of the canteen at Waverley station, Edinburgh, was recorded last week and Y.M.C.A. canteens are now being equipped at Perth and Aberdeen. Incidentally, Y.M.C.A. railway comfort centres are used by members of the railway staffs, but it is noted that these are most careful not to crowd out the soldiers, visiting the canteens only in slack times. A canteen has been in operation about a month at Inverness and is conducted by a local branch of the Women's Voluntary Service.

Toc H Incorporated is not at present concerned with canteen work at railway stations for Servicemen, this having been divided by arrangement between the Y.M.C.A., the Church Army, the Salvation Army, and one or two small bodies. Local members of Toc H are, in many instances, co-operating with other bodies in work for the Services, particularly in connection with railway travelling, and are running clubs and canteens outside the stations at Crewe and Peterborough, which are very popular. Contacts have been made with the R.T.Os. at various London stations with a view to providing night accommodation for those needing it when leave begins. Roman Catholics are represented by a canteen and recreation hut under the auspices of the Catholic Women's League. This is situated in the precincts of Westminster Cathedral, and is for the use of Servicemen of all denominations and is open day and night. There are at present 12 beds, available at the modest price of 6d. a night. The close proximity to Victoria station should make this very welcome for members of the Forces arriving late at night. Substantial meals are supplied at a very cheap rate. The canteen is staffed by relays of voluntary workers enrolled through the Catholic Women's League, and was opened formally on November 22, although it had been functioning since November 15. A second canteen was opened on November 17 at Blandford, and it is hoped to establish others in the near future.

#### British Troops in Paris

Two committees have now been organised in Paris to enable the numerous British residents to provide amenities for troops of the British Empire on duty or on short leave. At the Maison Anglaise in the Champs Elysees men find a ready welcome, with refreshments, cigarettes, and so forth, provided. British helpers are in the French canteens at all Paris railway termini to look after the troops as they pass through, and to greet them in their own tongue.

#### Lighted Suburban Trains

Although during the past month the L.M.S.R. has fitted approximately 160 main-line passenger trains with lighting which enables passengers to read in comfort, the equipment of steam suburban trains with a system which would give enough light for reading and yet meet the stringent requirements of the Government departments has proved a much more difficult task, owing to the use on these trains of coaches having compartment doors, and to the greater

number of stops at stations. By collaboration between railway and Government experts, however, these difficulties have now been overcome, and on Wednesday of last week (November 22) the L.M.S.R. demonstrated, on a London suburban steam train—the first so equipped in this country—the method which will be made general throughout the system as rapidly as the supply of material permits. The company's efforts with suburban trains will not be confined to the London area, and arrangements have been made to devote attention to the principal provincial centres, so that in a few days Liverpool, Manchester, Birmingham, Leeds, Bradford, Edinburgh, and Glasgow, will also have lighted suburban steam trains. The L.M.S.R. operates approximately 17,000 passenger vehicles, and the fitting of blinds to thousands of windows, together with the provision of light shields and curtains, represents a gigantic task, and one, moreover, that has to be done while the coaches are in service. The company's first order for strips of black paper to line the edges of windows was for 250,000 yards. So far the only stock that remains to be dealt with is the electric stock, which presents certain technical difficulties. In this connection, Mr. Ashton Davies stated last week that, while he could not for the moment say that the L.M.S.R. had found a solution, the company's experiments were in an advanced stage.

On the steam suburban stock upon which improved lighting is now being introduced, the amount and type of lighting vary with the class and type of coach, but the general practice is to have four white shoulder-lights, each of 15 watts, in first class compartments, together with one blue light in the roof. In the case of third class compartments, one type of coach has two white roof lights (each 15 watts) and one blue centre light, whilst the other type has a single 60-watt central roof light. The white lights are usually screened with metal shades having matt-black interiors, throwing the light down over the seats so as to enable passengers to read in comfort, but cutting-off the beams from shining directly out of the compartment door-

window. In a few cases, however, the ordinary glass bowl under the electric bulbs is blackened, and an aperture left white to throw a beam of light. The side blinds to all windows are drawn during hours of darkness, and the edges of the windows blacked-out as on main-line trains. Only the top half of the door window is blacked-out, however, and the lower half (which does not allow light to escape) is available for passengers to note at which station a train is stopping, or for latecomers to see whether a seat is vacant. Should an air raid warning be received, the guard will immediately extinguish all lights by means of the master switch (where through control of lighting exists) and the train will continue its journey. In the case of trains not fitted with a master switch, the train will stop at the next station for the lights to be extinguished coach by coach, an operation taking only a minute or two.

Successful experiments have also been carried out by the L.N.E.R., but on different lines from the L.M.S.R., to provide suburban passengers with sufficient light to read in comfort and at the same time ensure that such lighting is not observed from the air. The new L.N.E.R. device has now received official approval and the work of equipping over 1,000 coaches on suburban trains from Kings Cross, Liverpool Street, Marylebone, and Fenchurch Street is being begun immediately. The first train with the new lighting left Kings Cross for Potters Bar at 6.20 p.m. on Friday last, November 24. The device consists of a metal box 12 in. long by 10 in. deep by 6 in. wide, which is fitted over the centre roof lamp in every compartment. Two slots are provided in the base of the box, so designed that a beam of light sufficient for reading is thrown on all of the six seats on each side. Some 10,000 of these metal boxes will be required, and it is hoped that the work of equipping the coaches will be completed in about six weeks. Last Friday we were afforded the opportunity of inspecting this ingenious device under the guidance of Sir Nigel Gresley, Chief Mechanical Engineer, L.N.E.R., and were particularly impressed with the way in which the concentration of light

## NOTICE OF INCREASE

**In Through and Port to Port Rates for Conveyance of Merchandise Train Traffic, Passenger Train Traffic and Livestock between Great Britain and Ireland also between Great Britain and the Channel Islands.**

In pursuance of an Order made by the Minister of Transport on the 10th November, 1939, entitled "The Railways (Increase of Through Rates) Order, 1939," the Railway Companies trading between Great Britain and Ireland and between Great Britain and the Channel Islands hereby give notice that in consequence of the increased cost of operating sea services all rates between Great Britain and Ireland also between Great Britain and the Channel Islands will be increased as under on and from 20th November, 1939.

### 1. Merchandise Traffic:

<b>Traffic to—</b>	
Classes 1 to 6 of British Railway Classification	5/- per ton
Classes 1 and 2 of Irish Railway Classification	
Classes 7 to 10 of British Railway Classification	7/6 per ton
Classes 3 and 4 of Irish Railway Classification	
Classes 11 to 14 of British Railway Classification	10/- per ton
Classes 5 and 6 of Irish Railway Classification	
Classes 15 to 21 of British Railway Classification	12/6 per ton
Classes 7 to 9 of Irish Railway Classification	

### 2. Live Stock:

Horses and Mules and other beasts of burden.	25/- per head
Cattle and Calves	4/6 per head
Pigs	2/6 per head
Sheep, Lambs and other small animals	1/6 per head
Wild animals	10/- per head

### 3. Corpses:

	7/6 each
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### 4. Certain Traffic in the Passenger Train

Classification not embraced in the foregoing:

Division 1 (Hills)	6d. per can
Division 2 (Perishables Traffic other than Milk)	6d. per cwt.
Traffic in Divisions 1 and 2 charged at	
Exceptional and Special rates	6d. per cwt.

### Groups 1, 2, 3 & 4 (Parcels Scales):

Up to 10 lbs.	3d.
Over 10 lbs. but not exceeding 50 lbs.	4d.
Over 50 lbs. but not exceeding 84 lbs.	5d.
Over 84 lbs. but not exceeding 112 lbs.	6d.
Over 112 lbs.	6d. per cwt.

### Group 6 (Cycles, Perambulators, etc.):

Articles in Sections (a), (b) & (c)	4d. each
Articles in Sections (d), (e) & (f)	4d. each

Miscellaneous Traffic not otherwise provided for 6d. per cwt.

Public notice of increase in Channel merchandise and livestock rates

## AIR RAID PRECAUTIONS

IF THE EMERGENCY COMES

ALWAYS KEEP RESPIRATORS HANDY

WHEN AN AIR RAID ALARM is sounded:

- As both Passenger and Freight trains will continue to run during Air Raids, it is essential that such staff as is necessary to deal with them en route, at Stations, in Yards, at Motive Power Depots and at other points concerned with train movement shall remain on duty.  
All other staff—TAKE COVER.
- Ensure that no lights are visible to aircraft, and avoid use of matches or unscreened electric torches in the open.
- PRECAUTIONS AGAINST POISON GAS.**  
Remember that any cover which will keep out ordinary rain will also protect you from the rain of LIQUID POISON GAS.  
**IF CAUGHT IN THE OPEN, put on RESPIRATOR.**  
Remember that Liquid Gas falling in your eyes will blind you, so do not look up unless protected by a respirator, until half an hour has passed since the "RAIDERS PASSED" signal.  
If any unusual odour is noticed, such as mustard, geranium, garlic, etc., characteristic of POISON GAS, put on RESPIRATOR whether under cover or not.  
**IF YOU SUSPECT LIQUID GAS has fallen on your clothes, REMOVE YOUR OUTER CLOTHING as soon as practicable, if possible at a CLEANSING CENTRE.**
- REMEMBER** that if you are contaminated, you are a DANGER to OTHERS until your clothing has been removed and you yourself cleansed AND FOR YOUR OWN SAKE IMMEDIATE ACTION is necessary to avoid serious results.
- AFTER THE RAID—AVOID TOUCHING ANYTHING** in a contaminated area, unless protected by protective clothing or bleach ointment.
- KEEP CALM**—If the instructions are adhered to, these precautions will guard you from injury from Poison Gas.

### FURTHER PRECAUTIONS OF A LESS URGENT NATURE.

It is recommended that in the event of an air raid, all persons should be prepared to take immediate action in the event of an air raid, and to take such action as may be necessary to protect themselves and their property.

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## AIR RAID SHELTER

PERSONS MAY SHELTER  
HERE AT THEIR OWN  
RISK AFTER THE TAKE  
COVER NOTICE HAS  
BEEN GIVEN

Persons sheltering are not allowed  
to take Birds, Dogs, Cats and  
other Animals, as well as Mailcars,  
on to the Company's premises.

BY ORDER

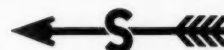
Electric Railway House,  
Broadway, Westminster

## UNDERGROUND STATIONS MUST NOT BE USED AS AIR RAID SHELTERS

The public are informed that in  
order to operate the railways for  
essential movement, Underground  
stations cannot be used as air  
raid shelters. In any event a  
number of stations would have  
to be cleared for safety in  
certain contingencies

DURING AIR RAIDS  
PASSENGERS ONLY  
· ADMITTED

## NEAREST SHELTER



Space for address of  
nearest shelter.

*After a quarter of a century: A poster (left) issued by the London Underground railways in September, 1917, offering shelter in a tube station, contrasted with two London Transport announcements (middle and right) of November, 1939*

through the slots enables seated passengers to read with ease, although practically no light is dispersed. Moreover, there is no need to draw the blinds, and, as in fact much of the suburban stock is not equipped with blinds, the arrangement is economical in not requiring such installation.

### Re-opening London Underground Stations

Marble Arch and Tottenham Court Road underground stations were duly re-opened on November 15, and Kings Cross tube station on November 17, the dates previously announced. Oxford Circus station, however, was re-opened on November 20—the same day as the extension of Bakerloo Line trains to Stanmore—four days ahead of schedule. Clapham Common and Oval stations were re-opened on November 24, and the London Passenger Transport Board has now announced dates for the re-opening of six more important underground stations which have been closed since the outbreak of war for the installation of protective works against possible flooding. Dates are: Friday, December 1, Green Park, Knightsbridge, and Arsenal; Friday, December 8, Bond Street, Hyde Park Corner, and Old Street. These six stations were used before the war by 750,000 passengers a week. On December 1 the Broad Street entrance to Liverpool Street underground station is to be re-opened.

### L.M.S.R. Protective Works

Protective works carried out by the L.M.S.R. have involved the provision of no fewer than five million sandbags, filled from forty special sand-dumps throughout the system, which have an aggregate capacity of 87,000 tons of sand. Fifty-seven Control and District Traffic Offices, which would have to continue functioning throughout air raids, have been given special protection; in some of the more vulnerable areas, these control centres are virtually concrete fortresses sunk well below the level of the ground. Nearly 300 steel shelters, seating from 12 to 16 men each, have been sunk into the ground at marshalling yards and other outdoor traffic centres, for each of which—as in fact for all railway centres—a complete A.R.P. scheme is in operation. Trenches aggregating 35,000 ft. in length have also been dug at outdoor centres. No fewer than 2,500 signal boxes in danger areas are furnished with steel shelters situated on the working floors, for the protection of the signalmen on duty, whilst other protective measures are also provided. The locking-gear and other fairly delicate apparatus, situated below the working floors, is protected by

steel plating, bricking-up, or sandbagging. By arrangement with the Government, every railway station has been classified for lighting restrictions, and 958 L.M.S.R. stations now have the "exempted" lighting necessary for efficient night operation. This, however, is lit only when operations are in progress and is extinguished in the event of an air raid warning. Large quantities of protective suits, steel helmets, and so forth, have been issued to men working in the open and required to keep traffic moving in any reasonable emergency, whilst every L.M.S.R. employee is now being issued with a tin of bleach ointment for treating the effects of blister gas, together with full instructions for its use.

### Accelerated and Augmented Train Services

Further details are now available of the important train service alterations which are to become operative on December 4. To the previous pamphlets of 84 and 31 pages respectively, the L.M.S.R. has now issued a further 44-page pamphlet announcing additional changes. The new trains are scheduled to the revised limit of 50 m.p.h. from start to stop, and this has enabled substantial accelerations to be made. A new 8.15 a.m. breakfast car train from Liverpool to Euston, calling at Mossley Hill, Crewe, and Bletchley and reaching London at 12.35 p.m., is an acceleration of 35 min. on the present 7.50 a.m. up; the 10 a.m. from Manchester will be due in Euston at 2.4 p.m., a gain of 36 min.; and the 2.15 p.m. from Manchester will run *via* Stoke instead of Crewe and arrive at 6.23 p.m., 25 min. earlier. The new 1 p.m. from Euston to Glasgow, calling at Rugby, Crewe, and Carlisle and arriving at 9.45 p.m., is 61 min. faster than the 10 a.m. down (the only existing day service), and the corresponding new 1 p.m. up, also arriving at 9.45 p.m., gains 87 min. on the existing 10 a.m. from Glasgow. An important new down breakfast car service will leave Euston at 8.30 a.m. for Liverpool and Manchester, calling at Watford to pick up and thereafter at Rugby to Crewe; Liverpool will be reached at 12.54 p.m., Manchester at 12.57 p.m., and a through portion for Blackpool will reach Preston at 1.37 p.m. The 8.45 a.m. from Euston will call at Blisworth, to give a much-needed connection to and from Northampton, and the Wolverhampton portion will leave Rugby first, reaching Birmingham at 11.22 a.m., 23 min. earlier. A new 4.10 p.m. dining car express will be run from Euston to Blackpool, calling at Rugby, Crewe, Warrington, Wigan, and Preston; Preston will be reached at 8.55 p.m. In the up direction the corresponding train will



leave Blackpool Central at 8 a.m., and Preston at 8.50 a.m., reaching Euston at 1.24 p.m., after a non-stop run from Crewe in 192 min. A new breakfast car express will leave Wolverhampton at 8 a.m. and Birmingham at 8.40 a.m., calling at Coventry and Rugby and reaching Euston at 11.10 a.m.; the corresponding down express will be at 6 p.m., first stop Coventry 7.54 p.m., and then Birmingham 8.24 p.m., and Wolverhampton 9.5 p.m. At night the 7.50 p.m. from Euston to Stranraer Harbour is altered to leave at 6.15 p.m. A night sleeping car service will be provided to Liverpool and Manchester at 11.55 p.m., and in the opposite direction at 11.20 p.m. from Manchester and 12.10 a.m. from Liverpool to Euston. New services are to run from Birmingham at 8.30 a.m. and 2 p.m. for Manchester and Liverpool, with corresponding return services.

On the Midland Division the 4 p.m. from St. Pancras starts at 4.5 p.m., is non-stop to Kettering, reaches Nottingham at 6.58 p.m. (24 min. earlier), and Sheffield at 8.17 p.m. (23 min. earlier), from which it is extended to Leeds, arriving at 9.30 p.m. A new 9.5 a.m. from St. Pancras to Leeds will run *via* Leicester, instead of as hitherto *via* Nottingham, reaching Leicester at 11.30 a.m., Sheffield at 1.10 p.m. and Leeds at 2.5 p.m. The 7.20 a.m. from Bradford to St. Pancras is accelerated to leave Leeds at 7.49 a.m., and Sheffield at 9 a.m.; travelling *via* Nottingham (dep. 10.12 a.m.), it reaches St. Pancras at 1.9 p.m., 65 min. earlier than the previous 7.20 a.m. from Bradford and 34 min. earlier than the previous 9 a.m. from Sheffield. The 12.20 p.m. from Bradford is also accelerated, travelling from

Chesterfield to Nottingham direct instead of *via* Derby, and reaching London at 6.33 p.m., 53 min. earlier. A new express is to run at 10.30 a.m. from Bradford, 11.2 a.m. from Leeds, 12 noon from Sheffield, and 1.20 p.m. from Nottingham to St. Pancras, reaching London at 4.5 p.m. As to night services, the Glasgow and Edinburgh portions of the 9.30 p.m. from St. Pancras once again are to run independently, both with sleeping cars, the Edinburgh portion, at 9.15 p.m., *via* Nottingham, and the Glasgow portion, as now, *via* Leicester; the same arrangement will apply in the up direction. In Scotland, the 5.5 p.m. express from St. Enoch will revert to its normal departure at 5.30 p.m., and will reach Carlisle at 8.18 p.m., only 5 min. later than usual. The 5.10 p.m. from Glasgow to Stranraer will be restored, running non-stop to Ayr in 55 min., and a corresponding non-stop service will be provided at 8.12 a.m. from Ayr to St. Enoch. Restaurant cars will again be run on the 10 a.m. and 1.30 p.m. from Glasgow (Buchanan Street) to Aberdeen, and the 6.15 a.m. and 5.30 p.m. from Aberdeen to Glasgow. Numerous other additions to the train services are being made all over the L.M.S.R. system.

#### L.N.E.R. London Suburban Services

The L.N.E.R. announces that the services between suburban stations on the Great Northern lines and Broad Street will be restored on December 4. It is expected that there will be eleven through trains during the morning peak hours, and twelve in the afternoons, Mondays to Fridays. Provision will also be made to cover the midday period on Saturdays.

## The Design of a Modern Locomotive

Mr. E. C. Bredin, Chief Mechanical Engineer, Great Southern Railways, gave his inaugural address on "The Design of a Modern Locomotive" to the 46th session of the Dublin University Engineering Society at Trinity College, Dublin, on Friday, November 17. The lecture, which was accompanied by a number of lantern slides, including some of well known engines running on other railways, had as its subject the design of the new "800" class G.S.R. 4-6-0 type 3-cylinder express locomotive\* for which Mr. Bredin was responsible, but, in dealing with it, points of general application to locomotives as a whole were referred to in some detail and in a most interesting and informative manner.

The lecturer opened his address by a reference to the universal popularity of the steam locomotive among various sections of the public, and went on to explain that the modern locomotive is expected to run 300 to 400 miles a day, or at least 2,000 a week, and 100,000 between major repairs. It must be able to perform its work without breakdown, working parts must be easily accessible for examination during the limited periods between trips, and the engine must also be economical in fuel consumption. Breakdowns do still occur because of unforeseen events, but the average period between such breakdowns is now about 85,000 miles, and engineers are gradually increasing this figure by better design and the use of improved materials.

The conditions imposed on the locomotive engineer in the design of a new

locomotive, by nature, by the permanent way and traffic departments, and lastly by the resources of his own department in regard to workshop facilities and turntables, were then outlined. These conditions are the contour of the line and the most severe gradient; the maximum axle load and total weight of engine; the weight of the train to be hauled and its speed, and in addition the longest non-stop run. The lecturer went on to explain that the basis of design of a particular type of locomotive depends on the axle load permitted, and emphasised the fact that a locomotive was dependent upon the friction between wheel and rail for the conversion of its power into movement, and that this friction possessed a known value from which the hauling power, or tractive effort, of a locomotive could be deduced. Subsequent details of design depend upon the value of this friction which varies with the total weight on the coupled axles; hence the variety of wheel arrangements and types of locomotives.

In moving a train the engine has to overcome the friction due to inertia at starting, friction due to acceleration, to gravity, and to wind resistance. These resistances each have a known value under known conditions and so the maximum tractive effort of a particular locomotive pulling a train of known weight and speed over known gradients, can be accurately calculated.

The relative values of 2-cylinder (inside), 2-cylinder (outside), and multi-cylinder engines, and the most suitable combination with which to fit a locomotive for a given traffic purpose were next dealt with. Among

other details of design referred to was the balancing of the wheels and working parts of a locomotive in order to prevent damage to the permanent way and to produce a steady-running engine; the necessity for a boiler of ample dimensions; the adoption of modern methods of construction, the use of improved materials so as to lengthen the period of service between repairs and to reduce cost of maintenance; and the importance of a large firegrate area for the economical consumption of fuel. The method of superheating and the advantages derived from the use of superheated steam were mentioned, and also the adoption of roller bearings for axles and working parts; the latter, it was pointed out, effectively obviate hot bearings and reduce wear, thus giving a decided decrease in maintenance costs, and at the same time extend the mileage run by locomotives between heavy shop repairs. The action of the exhaust steam in creating the draught on the fire automatically to meet the varying demands from the engine for steam, and the advantage of a double exhaust and a double chimney were referred to.

At the conclusion of the lecture a vote of thanks to Mr. Bredin was proposed by Mr. R. G. Booth, formerly a District Engineer, seconded by Mr. W. H. Morton, General Manager of the Great Southern Railways, and carried unanimously. Mr. Booth referred to the relation between the two departments and the necessity of having a permanent way capable of taking the heavier types of locomotives now running. Mr. Morton gave some interesting particulars concerning the uses of diesel locomotives and the feasibility of employing them in Eire, at the same time emphasising the reliability of the steam locomotive.

\* Described in THE RAILWAY GAZETTE, of April 14, 1939 (p. 617)

## The Engineer Technically, Commercially, and Personally

Efforts are being made by most of the technical institutions to carry out, at least in part, their programmes of addresses and discussions by members. The Yorkshire Association of the Institution of Civil Engineers inaugurated the present season with an address by the Chairman, Mr. J. Taylor Thompson, Assistant Engineer, N.E. Area, L.N.E.R. who departed from the usual custom of reviewing a particular aspect of engineering progress to discuss "The Engineer—Technically, Commercially, and Personally." He pointed out that engineering was not one of those callings in which a man could hope to succeed by reason of his personality alone, technical knowledge was a vital necessity. Very often, responsible engineers allowed non-technical calls on their time to interfere with their devotion to engineering so that work of this kind was left to their staff. They should never forget that their ability to give technical advice was the primary reason for their employment. To avoid becoming rusty and out of date in their knowledge of the work of others, it was essential for them to follow technical literature and the work of institutions—with, if necessary, the help of an assistant to file or abstract important contributions relevant to their particular branch. Not only reading but travel abroad was to be recommended—a glance at some structure in passing sometimes being sufficient to give an entirely new idea of an old problem. But as well as learning from others, so taking from the stock of common knowledge, the engineer ought to make a point of adding to that stock by contributing all he could to discussions and by writing papers when he had fresh knowledge to impart.

Commercial considerations were sometimes regarded as a little sordid by engineers, but engineering schemes had to be envisaged in relation to the purposes they were to serve so that their first cost, their earnings, and their requirements in the way of upkeep needed to be computed in advance. It was better for the engineer to originate engineering plans as a whole than for him to let others formulate them and be a mere draughtsman to do their bidding. Business knowledge was, then, essential to engineers who aspired to lead and direct important works. The ability to draw up accurate estimates was important because estimates on the low side meant that the completed work would give less than the expected return, thus being a cause of disappointment, while estimates on the high side were in danger of scaring the promoters from attempting the venture at all.

Emphasis was to be laid on the importance of spending money for constructional works as quickly as possible, for until it was spent there could be no return on the whole. In view of this need for speed it often paid better to incur extra cost when this led to a

saving of time. Here was a nice little problem of a purely economic kind which often faced the engineer. A problem of the same kind was involved in storekeeping. Excessive stocks represented idle capital, but a stock that sometimes ran short and led to a waste of time by waiting labourers introduced a loss that might prove to be greater.

Personality was no less important in an engineer than knowledge. To be able

to enlist the co-operation of the many different people called upon to execute a big scheme, a man needed to have a wide understanding of human nature. To select the right man for each job was a good beginning. No rules could be given for estimating personal qualities, the same head shapes for instance being found among university professors as among criminals. The present was a time of friendly relations in business, and engineers needed to realise how much more than a scanty and indifferent fulfilment of business agreements could be secured when they were on good personal terms with those who were working for them.

## QUESTIONS IN PARLIAMENT

### State Control of Railways

Mr. A. G. Walkden (Bristol, S.—Lab.), on November 22, asked the Minister of Transport whether, in view of the difficulty in reaching agreement with the railway companies as to financial terms for the present period of State control, and the possibility of the war with Germany being protracted, he was considering the desirability of nationalising the railways in order to avoid disputes, such as were dealt with by the Colwyn Royal Commission after the last war, and immediately to ensure complete unification and simplified working of the railways under a single board that would be directly responsible to the Minister.

Captain Euan Wallace (Minister of Transport): No, Sir. I have every hope that it will prove possible to reach agreement on the terms of compensation to the railways; and the present arrangements secure, through the Railway Executive Committee, the necessary unification in operation under war conditions.

Mr. C. C. Poole (Lichfield—Lab.): May I ask what body is considering the claims, if any, from the railway companies and who is adjudicating on the claims?

Captain Wallace: It is not a question of a body considering the claims. The matter is one for negotiation between His Majesty's Government and the companies.

Mr. Poole: In the event of their failing to reach an agreement, what steps are they proposing to take?

Captain Wallace: I do not like jumping a fence before I come to it.

### Compensation

Sir Ralph Glyn (Abingdon—U.), on November 22, asked the Minister of Transport whether he was now in a position to make a statement in regard to the terms arranged between the Government and the British railway companies for compensation for the taking over of the railways by the Ministry of Transport for the period of the war.

Mr. Alfred Edwards (Middlesbrough, E.—Lab.), asked the Minister of Transport if he expected much further delay

in fixing the terms on which the railway companies were to be remunerated; and if he could indicate the chief difficulties which had prevented earlier settlement of the question.

Captain Euan Wallace: As I indicated last week, negotiations with the railway companies are progressing. Meanwhile, I am not in a position to make any statement as to the terms under discussion.

### Facilities for Service Women

Mr. Ellis Smith (Stoke-on-Trent, Stoke—Lab.), on November 22, asked the Minister of Transport if it was intended to extend the free and cheap travelling facilities recently granted to cover all girls who were serving, including those engaged in the Navy, Army, and Air Force Institutes.

Captain Euan Wallace: Free and cheap railway facilities are granted to members of the Women's Royal Naval Service, members of the Women's Auxiliary Air Force, and female serving military personnel, including Army Nurses and General Service personnel of the Auxiliary Territorial Service. Free facilities are given to mobile members of Voluntary Aid Detachments, and the question of granting also cheap facilities in their case is under consideration. The staff employed in Service institutes are not serving personnel of the Forces and are not eligible for these concessions.

## Forthcoming Events

Dec. 11 (Mon.).—Institute of Transport (London), at Charing Cross Hotel, W.C.2, 2.30 p.m. Annual General Meeting.

Dec. 12 (Tues.).—Institution of Automobile Engineers, at Inst. of Electrical Engineers, Savoy Place, London, W.C.2, 6 p.m. "The use of Gas as a fuel for Motor Vehicles," by Dr. J. Clarke.

Dec. 14 (Thurs.).—Diesel Engine Users' Association, at Caxton Hall, Caxton Street, London, S.W.1, 2.30 p.m. "Overseas Operation of Diesel Engines," by Mr. H. Hopkins.

Institution of Locomotive Engineers (London), at Waldorf Hotel, Aldwych, W.C.2, 12.30 for 1 p.m., Luncheon, 2.30 p.m., Presidential Address by Mr. O. V. Bulleid.

## MINISTRY OF TRANSPORT ACCIDENT REPORT

**Farringdon, L.P.T.B. : May 1, 1939**

At about 9.42 p.m., as a three-car electric train, Whitechapel to Hammer-smith, composed of the latest metadyne stock with air-controlled doors, was leaving Farringdon station on the down Inner Circle line, it collided with G.W.R. 0-6-0 tank engine, No. 9705, running bunker first, drawing a van and traversing the crossover connection from the up Circle to the up Widened line. There was considerable damage, relative speed at moment of impact being probably not below 20 m.p.h. Motorman and driver had very narrow escapes; 17 passengers suffered minor injuries and shock, 9 more complaining later; 5 railway servants were injured. Colonel A. C. Trench conducted the inquiry and attributed the accident to the electric train passing the starting signal at danger.

The down Circle starting signal, D.10, is 23 yd. from the point of impact, and the stopping mark for three car trains is 75 yd. further east. There is a double-faced repeater for D.10 on one of the platform stanchions, the station being protected by an inner home D.11, intermediate home, D.12, and outer home D.13; adjacent to the latter is a repeater for D.11 and D.12. The signalling is generally of the all-electric track-circuit type met with on the Metropolitan Line of the L.P.T.B. All signals have train stops. In the up direction the facing crossing connection has splitting signals, D.3 (to Circle line) and D.6 (to Widened line). Crossing movements are made about 15 times daily.

The signal box is of the electro-mechanical type with slides for signals and levers for points, electrically interlocked. The down Circle signals work automatically when their slides are left pulled. Reversal of the points for the crossing movements (levers 39 and 40) locks the slides for D.10 and D.11 in the "danger" position. The signalling equipment was in process of modernisation and Colonel Trench therefore investigated with very particular care the possibility of any false operation that might have affected the starting signal D.10, but concluded that there were no reasonable grounds to suspect anything of the kind.

A train of normal length, standing close to the starting signal, would, if started against it, be tripped by the train stop at very low speed; the full brake application produced should stop it in a few yards. This three-car train had about 260 ft. to run before reaching the signal and train stop and, with the high acceleration of the metadyne trains, would be travelling at over 20 m.p.h. at the train stop, requiring about 180 ft. to come to a stand, assuming the trip cock was operated. The actual marks on the train stop and tripping lever were small and not conspicuous, and there was some difference of opinion between several members of

the staff who saw them before and immediately after the train stop was dismantled. Tests were made, one under Colonel Trench's observation, on freshly chalked or painted train stops; the results were very similar to those observed after the accident and examination under high power magnification disclosed similar dragging marks with fresh metal surfaces.

It sometimes happens that both train stops and trip cocks are in contact under other than emergency conditions, and it is known that the train stop concerned was in use at least twice two days before; thereafter there had been two days' rain and the train stop is in the open. Colonel Trench concludes that the marks should not be relied on as absolute proof that the stop was struck by this train, but indicates it as probable that the train stop was in the "on" position when the train started. There was evidence that the trip cock lever was found in the normal vertical position shortly after the accident. This might be thought to prove that it had not been struck, but the resetting cord had been broken in the accident and the prior tension would in any case have sufficed to reset the trip cock lever; the final position of this lever is therefore not useful evidence either way.

Driver Jones, of the G.W.R. engine, said signal D.6 was cleared for him to take the crossover when he had nearly come to a stand. He had seen the electric train and observed it sparking when he was on the crossing. He thought it might be backing to a siding but, on realising it was approaching, tried to

accelerate clear. He jumped across the footplate and avoided being crushed by the bunker. His speed might have been 15 m.p.h. He did not brake, as a head-on collision would have been worse. His trip cock lever he found vertical.

Motorman Pither, of the electric train, said he found the repeater of signals D.11 and 12 at caution, but the signals "off." After stopping at the platform he saw the starting signal clear but did not notice the repeater of the next automatic signal, which is beyond the crossing, nor did he see the G.W.R. engine. He got the guard's bell signal and was at that moment pressing his windscreen button to start the wiper. He then started away without again looking at the signal, but was sure he would have noticed it had it been red. (The air-door trains have a bell signal direct between guard and motorman; the older trains are started by a bell on the platform, rung by the guard touching overhead wires with his flag handle, an illuminated "S" appearing simultaneously on the starting signal. This action cannot take place, however, if the signal is "on." The sound of the two bells is quite different to anyone who is thinking about it; but there is some possibility of a misleading indication to a motorman whose attention is temporarily diverted elsewhere, or fails to assure himself that the signal is "off.") Pither noticed the lights of the engine only when half a car length away; he let go the dead man's handle and jumped across the cab. He felt the brakes take hold a moment before the collision. He found his trip cock vertical after the accident and also went to the signal box twice, telling the signalman the signal was "off," which the latter denied.



General view of L.P.T.B. train after collision with G.W.R. locomotive at Farringdon



The platform porter and the guard said the signal was green, and he showed the trip cock to two inspectors. Guard Ward said he noticed the repeater on the platform green before giving the bell signal to Pither. Porter O'Brien also declared this to have been the case.

Signalman Rich, on receiving a telephone message from Kings Cross that the engine was passing and seeing by his diagram that the electric train had not left Aldersgate, put No. 10 slide to "danger" and then No. 11 when the Hammersmith train had arrived. He never contemplated holding the latter at No. 11 signal and could not explain Pither's assertion that he had found the repeater for D.11 and D.12 "on." He set the crossing and cleared the signal for the engine, being surprised a moment later to see the electric train advancing. He shouted to the motorman. He was confident that the frame indications for D.10 and D.11 signals were red. He asked Lineman Fuller, then entering the box, to look over the frame to see everything was right. The latter, who has 25 years' service and 8 as power signal lineman, confirmed the correct condition of the apparatus. He examined the train stop with Inspector Berry and formed the impression that it had been struck recently, from a mark like a smudge; he could not, however, identify this later by daylight when the stop was in the offices. He had had no trouble with signal D.10 or its repeater within any date he could remember, nor any troubles since the changeover he had had in hand for some six weeks; prior to that there were one or two trifling matters.

#### Inspecting Officer's Conclusions

There is no reason to doubt that the signal was "off" for the engine; the alternatives therefore lie between a failure of the motorman and a failure of the signalling, possibly coupled with wrong operation by the signalman. Pither, an experienced and reliable driver, held firmly that his starting signal was "off" and was supported by the guard and the porter, but the evidence of those two men is not altogether convincing. The main argument is the statement of Pither. He originally said he did not notice the signal on stopping but did on starting, but reversed this statement to Colonel Trench. He had had the bell signal from the guard, and with the older type of train, which he was equally accustomed to driving, the platform bell signal would have indicated that the signal was "off." Admittedly the two bells are dissimilar in sound, but the acceptance of such a frequent sound may tend to be automatic. Pither had also to divert his attention to the screen wiper and the next signal in sight was no doubt green. For reasons given above, no reliance is placed on the position in which the trip cock was subsequently found; while the marks on the train stop are not evidence that it was struck, they are certainly not evidence to the contrary. The moment when the brakes would have been applied by the train stop was practically

identical with the time when Pither stated he released the dead man's handle.

With regard to a signalling failure, Rich's statements are confirmed by the lineman, and his story is supported by the interlocking, which had not been touched in the modernisation work. An intermittent and undetected fault is so improbable that it may be dismissed. Such a supposition would also imply that the backlock of D.10 signal also failed in an intermittent and untraceable manner, or had been released by the lineman immediately after the accident, and that he and the signalman knowingly made grossly false statements. The possibility has been considered that Rich may have changed his mind and first put signal D.11 to danger, intending to hold the Hammersmith train there, which would explain Pither's statement about seeing the repeater at "caution," then, deciding to give the electric train priority, pulled off D.11 with D.10 green, allowing the train to run in. Finding the G.W. engine close at hand he would then have to put D.10 to danger to set the crossing. This would mean that Pither passed the signal at danger, but was misled by seeing it "off" when he ran in; the approach lock on D.10 is partly to guard against this. No adequate reason is seen for supposing that Rich would change his mind twice in rapid succession; moreover, the approach lock on D.10 by the platform track circuit would have prevented him from putting No. 10 slide normal and, for the same reason, he could not have done that after the accident. There are no reasonable grounds for suspecting a fault which might have put D.10 to green wrongly.

Colonel Trench concludes that the signal was red when Pither passed it, that his train was tripped, and that the primary responsibility is his. Possibly he accepted the guard's bell as being the other type which would have indicated that the signal was "off." He has been a motorman for 15 years, with a good record and commendation for drawing attention to a fault. Guard Ward must bear some responsibility, as the regulations made him responsible for seeing that the signal was "off." Possibly he accepted O'Brien's hand signal without looking at the repeater and thought the latter had seen the starting signal. O'Brien had, however, no specific responsibility for seeing signals. No blame can be attributed to the locomotive driver.

#### Recommendations and Remarks

There is no instruction or interlocking which prevents a Circle train being allowed to draw into the platform up to starting signal D.10 at danger, after which inner home D.11 can be put to danger in its rear and, provided the train is at a standstill, the crossover can then be set. It has been the practice to do this sometimes to avoid delay. Having regard to the very short distance between D.10 and the fouling point, it would be desirable that when a crossing movement is being made any Circle

train should be held back at D.11 signal, from which the distance is ample to allow the train stop to bring it to a stand should the driver pass the signal wrongly. The board has already issued instructions to this effect. It is for consideration whether they should not be reinforced by suitable locking. The inherent similarity between the two bell signals, one of which proves that the starting signal must be off, the other that the train doors are closed, may probably have been a contributing cause in this accident. Colonel Trench is reluctant to suggest any reduction of the safeguard provided for the older trains by the interlock with the starting signal, but this will gradually lapse with the increasing proportion of the newer (air-door) trains and, during the transition period, present arrangements may induce a false sense of security or, at any rate, risk of misapprehension.

There are various possible schemes such as (a) that the noise in one case should be a bell and, in the other a hooter; or (b) that the platform bell should be abolished and the illumination of the "S" light be the motorman's signal to start in the case of the older trains. The board should consider the practicability of some scheme of this kind.

### Publications Received

**Railway Posters and the War, No. 1.** London: THE RAILWAY GAZETTE, 33, Tothill Street, S.W.1. 7½ in. x 5 in. Price 6d. net.—On September 1 the Minister of Transport made an Order taking control of all the principal railway undertakings in Great Britain, and appointed the Railway Executive Committee. Many changes in railway operation have since become necessary through blackout regulations, the closing of a number of London tube stations, alterations in freight transit arrangements, special goods labelling requirements, the curtailment and part restoration of passenger train services, the suspension and subsequent reinstatement of restaurant and buffet cars, and the cancellation and resumption of cheap day tickets. Notification of these changes has been made to members of the public mainly by means of posters, and this brochure consists of reproductions in facsimile of these, with the addition of the Order appointing the Railway Executive Committee. Some of these are historic documents, and their publication in this form is designed to facilitate present-day reference and permanent preservation.

**Electric Lamps.**—Full particulars of the wide range of Osram and Osira lamps are contained in the latest catalogue—No. OS. 8836—of the General Electric Co. Ltd. The applications cover not only ordinary domestic and decorative lighting, but also car and commercial vehicle bulbs, miners' lights, ultra-violet lamps, and strip-light displays.

## NOTES AND NEWS

**Another Railway Accident in Germany.**—In a collision between a passenger and a goods train on November 26, at Nieder Wöllstadt, 17 miles from Frankfurt, on the main line to Kassel, 15 persons are reported to have lost their lives.

**Railway Students' Association.**—In view of the present emergency the activities of the Railway Students' Association (London School of Economics and Political Science, University of London) have ceased. A further announcement will be made when arrangements can be made for the meetings to be resumed.

**Modern Painting.**—In few branches of railway activity has more technical progress been made within recent years than in painting, both of rolling stock and structures. Spray painting is an accepted modern method, and the various models of B.E.N. spray painting guns and plants are described in an illustrated brochure, No. CB.13, just issued by B.E.N. Patents Limited, of High Wycombe. Appropriately, the back cover shows species of gas masks, for the use of spray painters.

**Northern Ireland Traffic.**—Total passenger receipts on railways wholly in Northern Ireland during the first eight months of 1939 were £216,192, an improvement of £3,845 on the corresponding period of 1938, although the number of passengers (excluding season-ticket holders) fell from 4,246,987 to 4,166,440. Merchandise and minerals conveyed in the first eight months of 1939 were 355,893 tons, an increase of 25,842 tons in comparison with the first eight months of 1938; the number of livestock rose from 140,102 to 256,866, and the total goods traffic receipts from £124,699 to £132,276. On railways partly in Northern Ireland, the ordinary passengers in the first eight months of 1939 were 3,932,545, against 3,900,377 in the first eight months of 1938, and the total passenger receipts of £334,076 were £2,906 higher. Merchandise and mineral tons for the eight months increased from 598,953 to 730,098, and

the number of livestock from 442,230 to 482,311. Total receipts from goods traffic in the first eight months of 1939 were £441,646, against £394,227 in the corresponding period of 1938.

**East Kent Light Railways Company.**—Mr. Justice Bennett, on November 8, ordered that the scheme of arrangement between the company and its stockholders, which was filed on May 31, be confirmed, subject to a verbal modification.

**Persian Railways Syndicate Limited.**—Notice is given in *The London Gazette* of November 14 that a general meeting of the members of the above-named company will be held at 19, Leadenhall Street, London, on December 15 for the purpose of having an account laid before them showing how the winding-up has been conducted.

**Folkestone-Dover Line Blocked, S.R.**—During the night of November 28-29 a large fall of cliff occurred between Abbott's Cliff and Shakespeare Cliff tunnel, completely blocking both up and down lines. An emergency bus service was established between Folkestone Junction and Doyer Priory stations. It may be recalled that an extensive landslide in the early part of the last war necessitated the closing of the same stretch of main line, and it was not reopened till 1919.

**Canadian National Earnings.**—Gross earnings of the Canadian National Railways in October, 1939, were \$21,943,155, an increase of \$2,008,002 in comparison with October, 1938. Operating expenses amounted to \$16,489,307, with an increase of \$1,205,016, resulting in net earnings of \$5,453,848, which were \$802,986 higher than for October, 1938. Aggregate gross earnings for the first ten months of 1939 totalled \$164,189,092, an increase of \$13,916,505 in comparison with the corresponding period of 1938, and the aggregate net earnings of \$12,106,202 showed an improvement of \$9,910,595.

## Irish Traffic Returns

IRELAND	Totals for 47th Week			Totals to Date		
	1939	1938	Inc. or Dec.	1939	1938	Inc. or Dec.
Belfast & C.D. (80 miles)	pass. 2,148 goods 577 total 2,725	1,566 512 2,078	+ 582 + 65 + 647	122,889 22,115 145,004	116,952 20,699 137,651	+ 5,937 + 1,416 + 7,353
Great Northern (543 miles)	pass. 9,600 goods 14,850 total 24,450	8,100 10,800 18,900	+ 1,500 + 4,050 + 5,550	531,750 516,950 1,048,700	521,750 440,100 961,850	+ 10,000 + 76,850 + 86,850
Great Southern (2,076 miles)	pass. 27,049 goods 61,475 total 88,524	26,014 54,399 80,413	+ 1,035 + 7,076 + 8,111	1,729,670 2,127,968 3,857,638	1,734,380 1,955,936 3,690,316	— 4,710 + 172,032 + 167,322
L.M.S.R. (N.C.C.) (271 miles)	pass. 4,080 goods 3,820 total 7,900	2,790 2,780 5,570	+ 1,290 + 1,040 + 2,330	221,750 143,210 364,960	213,330 124,280 337,610	+ 8,420 + 18,930 + 27,350

## British and Irish Railway Stocks and Shares

Stocks	Highest 1938	Lowest 1938	Prices	
			Nov. 28, 1939	Rise/Fall
G.W.R.				
Cons. Ord.	65½	25¾	30½	—
5% Con. Prefce.	118¾	74	86	—
5% Red. Pref. (1950)	111¾	90	92½	—
4% Deb.	111	97½	100½	—
4½% Deb.	112½	100½	102	—
4½% Deb.	118½	104	105½	—
5% Deb.	131½	119	117½	—
2½% Deb.	69¾	60	58½	—
5% Rt. Charge	129	114	109	—
5% Cons. Guar.	128½	103	107	—
L.M.S.R.				
Ord.	30½	11	12	—
4% Prefce. (1923)	70½	23	39½	—
4% Prefce.	82½	43¾	59½	—
5% Red. Pref. (1955)	103½	66	76	—
4% Deb.	105½	85	92½	—
5% Red. Deb. (1952)	114½	105	105	—
4% Guar.	102¾	77½	82½	—
L.N.E.R.				
5% Pref. Ord.	89½	31½	3¾	—
Def. Ord.	47½	21½	2¾	—
4% First Prefce.	68½	21	33½	—
4% Second Prefce.	27½	8	9½	—
5% Red. Pref. (1955)	97	40½	46	—
4% First Guar.	97½	66½	74½	—
4% Second Guar.	91½	52	65½	—
3% Deb.	79	60	66½	—
4% Deb.	104½	77	87½	—
5% Red. Deb. (1947)	110¾	97	100½	—
4½% Sinking Fund Red. Deb.	181½	101	99	—
Southern				
Pref. Ord.	87	47½	65	—
Def. Ord.	21¾	9¼	11¼	—
5% Pref.	115	83	88	—
5% Red. Pref. (1964)	115½	98	96½	—
5% Guar. Prefce.	128½	106	106½	—
5% Red. Guar. Pref. (1957)	116	108½	106½	—
4% Deb.	109½	95	100½	—
5% Deb.	129	117	114½	—
4% Red. Deb. 1962-67	107	101½	102½	—
Belfast & C.D. Ord.	4	3½	4	—
Forth Bridge				
4% Deb.	102	99½	87½	—
4% Guar.	103½	94½	84½	—
G. Northern (Ireland)				
Ord.	5½	2½	6	—
G. Southern (Ireland)				
Ord.	25½	8½	13	—
Prefce.	35	13	22½	—
Guar.	70½	30½	36½	—
Deb.	83	56	53	—
L.P.T.B.				
4½% "A"	119½	107½	107½*	—
5% "A"	130	117	109½*	—
4½% "T.F.A."	108	98	104	—
5% "B"	122½	105	105½*	—
"C"	84	68	65½	—
Mersey				
Ord.	24½	16½	17½	—
4% Perp. Deb.	102½	94½	90	—
3% Perp. Deb.	77	69	65½	—
3% Perp. Prefce.	66½	5	52½	—

\* ex dividend

## OFFICIAL NOTICES

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## London and North Eastern Railway

NOTICE IS HEREBY GIVEN that, for the purpose of preparing the warrants for interest on the Company's 3 per cent. and 4 per cent. Debenture Stocks, and 4½ per cent. Sinking Fund Debenture Stock for the half-year ending 31st December, 1939, the balances will be struck as at the close of business on 11th December, and interest will be payable only to those Stockholders whose names are registered on that date.

Transfers of the above-mentioned Stocks should, therefore, be lodged with the Registrar of the Company at Hamilton Buildings, Liverpool Street Station, London, E.C.2, before 5.0 p.m. on 11th December.

By Order,  
P. J. DOWSETT,  
Secretary.

Marylebone Station,  
London, N.W.1.  
1st December, 1939.

## OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Wednesday. All advertisements should be addressed to—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

## RAILWAY AND OTHER REPORTS

**Entre Rios Railways Co. Ltd.**—The directors have decided to pay on December 1 a further six months' arrears of interest on the 4 per cent. debenture stock, together with the 5 per cent. interest on such arrears as provided for under the moratorium scheme, the total amounting to £2 3s. 4d. per cent., less income tax.

**Bengal Dooars Railway Co. Ltd.**—The directors recommend a final dividend of 3½ per cent. for the year to March 31, 1939, subject to income tax, making with the interim dividend of 3 per cent. paid on March 29, 1939, a total distribution of 6½ per cent. for the year ended March 31, 1939.

**Pennsylvania Railroad Company.**—The directors have declared a dividend of \$1 a share (2 per cent. on the par

value of the company's stock), payable December 18, 1939. At this time a year ago a dividend of 50 cents. (1 per cent.) was declared. The President of the Company states that this disbursement of \$1 a share will be paid out of earnings anticipated for the year 1939 which it is expected will be more than sufficient to meet it.

**Moss Gear Co. Ltd.**—A final dividend of 13½ per cent. is recommended, making 17½ per cent. for the year ended August 31, 1939. This compares with 8½ per cent. and 12½ per cent. respectively.

**Brown Bayley's Steel Works Limited.**—Profits for the year to July 31 were £128,784, against £154,449 for 1937-38. The directors recommend a final ordinary dividend of 10 per cent.,

tax free, making 15 per cent., tax free, for the year, the same as for 1937-38. They propose to transfer £30,000 to general reserve and £25,000 to obsolescence reserve, and to carry forward £19,938, against £14,871 brought in.

**Butler Machine Tool Co. Ltd.**—The directors recommend a dividend of 15 per cent. and a bonus of 2½ per cent. for the year ended September 30, 1939, being the same as for the previous year. The net profit is £64,942, against £53,301.

**Associated Equipment Co. Ltd.**—A final dividend is recommended of 1s. per unit of stock, free of tax, making 1s. 6d. per unit, tax free, for the year to September 30, 1939, approximately equal to 11.54 per cent. for the year, subject to tax at 7s. in the £. Net profits for the year (subject to final audit) are £179,500, against £177,500 for the previous year.

## CONTRACTS AND TENDERS

Cowans, Sheldon Limited, of Carlisle, has in hand orders for a 30-ton breakdown crane with relieving bogies for the broad-gauge section of the B.B.C.I.R.; for three traversers for the L.N.E.R. (one for Doncaster and two for York); and for one traverser for the Derby works of the L.M.S.R.

Pratchitt Bros. Ltd., of Carlisle, has an order for one railway ticket machine from the Crown Agents for the Colonies.

The Bombay, Baroda & Central India Railway has placed the following orders to the inspection of Messrs. Rendel, Palmer & Tritton:

British Insulated Cables Ltd., Prescott: 12,500 yd. of cable for power signalling.  
General Electric Co. Ltd.: 9,500 yd. of cable for power signalling.

The Government of Brazil has issued a decree authorising the secretary of the Department of Communications and Public Works to take such steps as he may deem practicable to forward the electrification of an 87-mile section of the Sorocabana Railway.

Thos. Bolton & Sons Ltd. has received an order from the Bengal-Nagpur Railway for copper bars and pipes, and for phosphor bronze.

The following orders have been placed recently by the Egyptian State Railways:

Differdange Company, Luxembourg: Rolled steel joists for Saptieh subway (£10,211).  
Brown Bayley's Steel Works Ltd., Sheffield: Steel bars (Order No. 7.198: £234).  
British Insulated Cables Ltd., Prescott: Wire and copper cable (Order No. 30.496: £282).

The United States Steel Corporation is reported to have submitted to the Brazilian Government plans for the erection of a steelworks at Rio de Janeiro at a cost of about \$30,000,000. The capacity would be about 300,000 tons a year, approximately equivalent to Brazil's steel imports. The capital would be provided by United States Steel Corporation and various Brazilian interests, and it is reported that the U.S. Steel Corporation is willing to advance \$10,000,000 at once, if the agreement is signed and the interest and dividends guaranteed.

The following orders have been placed to the inspection of Messrs. Robt. White & Partners:

South Indian Railway: John Lysaght & Co. Ltd.: 470 steel panel sheets.  
Junagad State Railway: Rivet, Bolt & Nut Co. Ltd.: 2 tons of steel rivets.

The following orders have been placed by the Indian Stores Department:—

Heatly & Gresham, Limited: 117 cwt. solid drawn copper tubes. Locomotive spare parts.  
Baldwin Locomotive Works: Spares for Sunbeam turbo-generator headlights.  
Consolidated Pneumatic Tool Co. Ltd.: Two air compressor plants.

The following orders have been placed to the inspection of Messrs. Fox & Mayo by the China Purchasing Agency: Doulton & Co. Ltd.: Insulators.  
Eagle & Globe Steel Co. Ltd.: Carbon steel.  
Wm. Asquith Ltd.: One drilling machine.

The Egyptian State Railways invite tenders for copper and brass bars (E.S.R. 306.G.8/114); 200,000 metres of hard drawn copper line wire (E.S.R. 330.G.8/165); steel rounds, bars and plates (E.S.R. 1.563); copper bars and plates (E.S.R. 6.378); and glasses for coaching stock, signal spectacles, and lamps (E.S.R. 46.199). Particulars from the Chief Inspecting Engineer, 41, Tothill Street, London, S.W.1.



## Railway Share Market

Although dull and inactive conditions obtained in most sections of the Stock Exchange, home railway securities have continued to attract attention, and some of the junior stocks show substantial improvement on balance. Sentiment continued to be influenced by hopes of an early announcement as to the basis of Government compensation to the companies and stockholders during the war period. If market hopes in this connection are realised, Southern preferred, L.M.S.R. preference stocks, and L.N.E.R. first preference would still be moderately priced, despite their recent good improvement. Consequently the higher prices have not been followed by much profit-taking, although it cannot, of course, be granted that the market is necessarily correct in its anticipations, and, so far as is known, negotiations in connection with the matter of war-time compensation have not been finally completed. Debentures and other prior charges again moved higher, but this is, of course, influenced by the level recently established by gilt-edged and by the tendency to give more attention to good class investments showing higher yields than Government securities. A point now, however, appears to be approaching when it must be expected that debenture stocks of the main line companies will move

very closely with short term trends in the gilt-edged market.

Southern preferred has again provided the chief feature, the price having advanced further to 65½, which compares with 58½ a week ago. Southern deferred was two points better at 11½, while the 5 per cent. preference gained three points to 87½. Moreover, the 5 per cent. guaranteed at 106½, and the 4 per cent. debentures at par, were each a point above the prices ruling a week ago. Demand for L.M.S.R. 1923 preference advanced the price from 33 to 40, and the 4 per cent. first preference moved up from 56 to 59½. In the case of the ordinary stock an improvement from 10½ to 11½ has been recorded. While the 5 per cent. debentures remained at 105, the 4 per cent. debentures showed a gain from 91 to 92½, and the 4 per cent. guaranteed was higher at 83, at which the yield seems on the generous side, having regard to the investment status of this stock. As was to be expected, L.N.E.R. guaranteed participated in the upward movement, the first being 74, compared with 71 a week ago, and the second 65, compared with 61½. In addition, the first preference moved from 28 to 34, and the second preference showed improvement to 9½. Some speculative buying of the preferred and deferred stocks was

reported. Among L.N.E.R. debentures the 4 per cents. rallied two points to 87, and the 3 per cents. 1½ points to 66. Great Western ordinary moved up from 28½ to 30½, the 5 per cent. preference from 80½ to 86, and the 4 per cent. debentures were at par, a rise of one point on the week. London Transport "C" remained pegged at the official minimum of 65, but the "A" and "B" stocks were higher.

The prospect of smaller exchange losses on remitting profits from the Argentine and expectations of improving trade conditions in South America, continued to influence Argentine railway securities. Owing to profit-taking sales, best prices touched during the past few days were not held, but on balance for the week the more widely-held stocks, particularly preference and debenture issues, showed further improvement. Central Argentine 6 per cent. preference was 36, while B.A. & Pacific 4½ per cent. debentures moved from 37½ to 39. In addition, B.A. Gt. Southern 4 per cent. debentures recorded a rise from 60 to 63½, while the 5 per cent. preference was 28, compared with 25½ a week ago. San Paulo ordinary improved from 36 to 38, and Leopoldina debentures were better at 16½. Canadian Pacific remained around 7 and the preference held virtually all its recent rise.

### Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1938-39	Week Ending	Traffic for Week		No. of Weeks	Aggregate Traffic to Date			Shares or Stock	Prices						
			Total this year	Inc. or Dec. compared with 1938		Totals		Increase or Decrease		Highest 1938	Lowest 1938	Nov. 28, 1939	Yield % (See Note)			
						This Year	Last Year									
South & Central America	Antofagasta (Chili) & Bolivia	834	19.11.39	16,710	+	£ 710	46	626,280	692,230	-	£ 65,950	Ord. Stk.	14	71½	91½	Nil
	Argentine North Eastern ..	753	18.11.39	ps. 142,000	-	ps. 85,000	21	ps. 3,430,300	ps. 3,564,700	-	ps. 134,400	6 p.c. Deb.	612	2	212	Nil
	Bolivar ..	174	Oct. 1939	4,500	+	950	43	42,850	37,200	+	5,650	Bonds.	8	7	7	Nil
	Brazil ..	2,801	18.11.39	ps1,203,000	-	ps74,000	21	ps.24,188,000	ps23,775,000	+	ps413,000	Ord. Stk.	10	4	6	85½
	Buenos Ayres & Pacific ..	190	21.10.39	\$107,700	-	\$5,400	17	\$1,934,600	\$2,045,700	-	\$11,100	Ord. Stk.	61½	31½	4	Nil
	Buenos Aires Central ..	5,082	18.11.39	ps2,182,000	+	ps239,000	21	ps39,132,000	ps40,555,000	-	ps1,423,000	Mt. Deb.	15½	8	19	Nil
	Buenos Ayres Western ..	1,930	18.11.39	ps. 852,000	+	ps127,000	21	ps14,109,000	ps13,110,000	+	ps999,000	Ord. Stk.	125½	812	9	Nil
	Central Argentine ..	3,700	18.11.39	ps1,774,750	+	ps114,500	21	ps38,117,050	ps33,857,650	+	ps4,259,400	Ord. Sh.	131½	55½	9	Nil
	Do. ....	—	—	—	—	—	—	—	—	—	—	Dfd.	6	21½	212	Nil
	Cent. Uruguay of M. Video ..	972	18.11.39	22,258	+	156	21	346,975	358,152	-	11,177	Ord. Stk.	3	11½	2½	Nil
	Costa Rica ..	188	June 1939	25,240	-	6,129	52	270,756	314,399	-	43,643	Ord. Stk.	28	22½	22½	87½
	Dorada ..	70	Oct. 1939	13,000	-	2,800	43	136,700	163,800	-	27,100	1 Mt. Db.	105½	104	102½	57½
	Entre Rios ..	810	18.11.39	ps. 232,500	-	ps20,600	21	ps. 5,201,500	ps5,195,800	+	ps. 5,700	Ord. Stk.	714	312	5	Nil
	Great Western of Brazil ..	1,016	18.11.39	12,700	-	100	46	384,800	338,800	+	56,000	Ord. Sh.	3/-	1/-	516	Nil
	International of Cl. Amer. ..	794	Sept. 1939	\$862,984	-	\$8,355	39	\$4,486,381	\$4,189,953	+	\$296,428	Ord. Pref.	—	—	—	—
	Interoceanic of Mexico ..	—	—	—	—	—	—	—	—	—	—	1st Pref.	6d.	6d.	1½	Nil
	La Guaira & Caracas ..	22½	Oct. 1939	5,615	-	615	43	60,725	53,110	+	7,615	Ord. Stk.	8	61½	71½	Nil
	Leopoldina ..	1,918	18.11.39	24,110	-	2,506	46	970,010	984,709	+	14,699	Ord. Stk.	4	1	2½	Nil
	Mexican ..	483	21.8.39	\$286,000	+	\$35,500	8	\$2,003,100	\$1,988,800	+	\$14,300	Ord. Stk.	7½	116	1½	Nil
	Midland of Uruguay ..	319	Oct. 1939	8,389	+	921	18	34,490	34,365	+	124	Ord. Sh.	7½	12	1½	Nil
	Nitrate ..	386	15.11.39	6,896	+	2,274	25	126,095	126,914	+	21,819	Ord. Sh.	52/9	1918	13½	71½
	Paraguay Central ..	274	18.11.39	\$3,074,000	+	\$324,000	25	\$64,277,000	\$61,847,000	+	\$2,430,000	Pr. Li. Db.	60	551½	3½	15½
	Peruvian Corporation ..	1,059	Oct. 1939	62,485	-	3,310	18	254,699	278,342	-	23,643	Pref.	53½	15½	2	Nil
	Salvador ..	100	28.10.39	48,784	+	47,416	18	165,670	199,461	+	433,791	Pr. Li. Db.	23	20	15	Nil
	San Paulo ..	153½	19.11.39	33,687	+	4,984	46	1,438,727	1,481,584	-	42,857	Ord. Stk.	64	28	37	55½
	Taital ..	160	Sept. 1939	740	-	940	13	4,425	7,900	-	3,475	Ord. Sh.	13½	1	916	87½
	United of Havana ..	1,353	18.11.39	12,430	-	149	21	349,488	329,868	+	19,620	Ord. Stk.	358	12	1	Nil
	Uruguay Northern ..	73	Oct. 1939	962	-	158	18	3,634	3,899	-	265	Deb. Stk.	2	1	2	Nil
Canada	Canadian National ..	23,691	21.11.39	967,630	+	205,467	46	35,653,734	32,389,290	+	3,264,444	—	—	—	—	—
	Canadian Northern ..	—	—	—	—	—	—	—	—	—	4 p.c. Gar.	72	60	73	51½	
	Grand Trunk ..	—	—	—	—	—	—	—	—	—	—	104	90	98½	41½	
Canadian Pacific ..	17,171	21.11.39	733,600	+	176,600	46	26,558,800	25,254,800	+	1,304,000	Ord. Stk.	87½	41½	7	Nil	
India	Assam Bengal ..	1,329	30.9.39	48,742	+	610	26	732,490	696,217	+	36,273	Ord. Stk.	81½	70	81½	41½
	Baru Light ..	202	20.10.39	2,538	+	517	28	63,960	78,900	+	14,940	Ord. Sh.	60½	54½	45	87½
	Bengal & North Western ..	2,112	31.10.39	73,250	+	3,373	4	199,617	210,647	+	11,030	Ord. Stk.	311	278	233	75½
	Bengal Doonars & Extension ..	161	10.11.39	6,247	+	633	30	86,468	92,576	+	7,108	Ord. Stk.	89	83	85½	75½
	Bengal-Nagpur ..	3,267	10.11.39	221,475	+	24,758	30	4,717,680	4,161,317	+	556,543	Ord. Stk.	9512	90	83½	41½
	Bombay, Baroda & Cl. India ..	2,986	20.11.39	236,925	+	8,175	32	5,404,050	5,452,575	+	48,525	Ord. Stk.	1127½	95	98½	61½
	Madras & Southern Mahratta ..	2,967	20.10.39	133,500	+	5,433	28	3,153,597	3,027,973	+	125,624	Ord. Stk.	108	97	99½	71½
	Rohilkund & Kumaon ..	546	31.10.39	13,485	+	806	4	37,247	38,923	+	1,676	Ord. Stk.	308	285	240	71½
	South Indian ..	2,531½	31.10.39	114,034	+	5,984	29	2,428,185	2,436,794	+	8,609	Ord. Stk.	104	101	87½	51½
Various	Beira ..	204	Aug. 1939	91,166	-	—	48	887,267	—	—	—	—	—	—	—	—
	Egyptian Delta ..	623	10.8.39	5,875	+	486	19	67,548	65,905	+	1,643	Prf. Sh.	—	5/6	12	Nil
	Kenya & Uganda ..	1,625	May 1939	206,557	-	11,295	21	1,220,870	1,309,332	-	88,462	B. Deb.	49	41	44	715½
	Manila ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Midland of W. Australia ..	277	Sept. 1939	13,513	-	3,516	13	36,618	44,686	-	8,068	Inc. Deb.	93½	89	89	41½
	Nigerian ..	1,900	9.9.39	26,014	-	2,468	24	641,547	700,337	-	58,790	—	—	—	—	—
	Rhodesia ..	2,442½	Aug. 1939	406,107	-	—	48	4,013,240	—	—	—	—	—	—	—	—
	South Africa ..	3,284	21.10.39	647,613	+	24,185	30	19,093,518	17,970,315	+	1,123,203	—	—	—	—	—
Victoria ..	4,774	Aug., 1939	698,267	-	64,636	9	1,383,157	1,479,248	-	96,091	—	—	—	—	—	

NOTE. Yields are based on the approximate current prices and are within a fraction of 1/16 Argentine traffic is now given in pesos.

† Receipts are calculated @ 1s. 6d. to the rupee.

§ ex dividend